

ORDER NO. KMS0505068CE

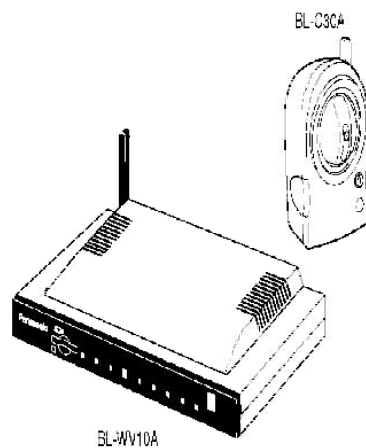
F5

Service Manual

Wireless Camera Monitoring System

BL-MS103A

(for U.S.A.)



**© 2005 Panasonic Communications Co., Ltd. All rights reserved.
Unauthorized copying and distribution is a violation of law.**

IMPORTANT INFORMATION ABOUT LEAD FREE, (PbF), SOLDERING

If lead free solder was used in the manufacture of this product the printed circuit boards will be marked PbF.

Standard leaded, (Pb), solder can be used as usual on boards without the PbF mark.

When this mark does appear please read and follow the special instructions described in this manual on the use of PbF and how it might be permissible to use Pb solder during service and repair work.

1. ABOUT LEAD FREE SOLDER (PbF: Pb free)

Note:

In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.

We will use PbF solder when discussing the lead free solder used in our manufacturing process which is made from Tin, (Sn), Silver, (Ag), and Copper, (Cu).

This model, and others like it, manufactured using lead free solder will have PbF stamped on the PCB.

For service and repair work we suggest using the same type of solder although, with some precautions, standard Pb solder can also be used.

Caution

- **PbF solder has a melting point that is 50° ~ 70° F, (30° ~ 40°C) higher than Pb solder. Please use a soldering iron with temperature control and adjust it to 700° ± 20° F, (370° ± 10°C). In case of using high temperature soldering iron, please be careful not to heat too long.**
- **PbF solder will tend to splash if it is heated much higher than its melting point, approximately 1100°F, (600°C).**
- **If you must use Pb solder on a PCB manufactured using PbF solder, remove as much of the original PbF solder as possible and be sure that any remaining is melted prior to applying the Pb solder.**
- **When applying PbF solder to double layered boards, please check the component side for excess which may flow onto the opposite side (See figure, below).**

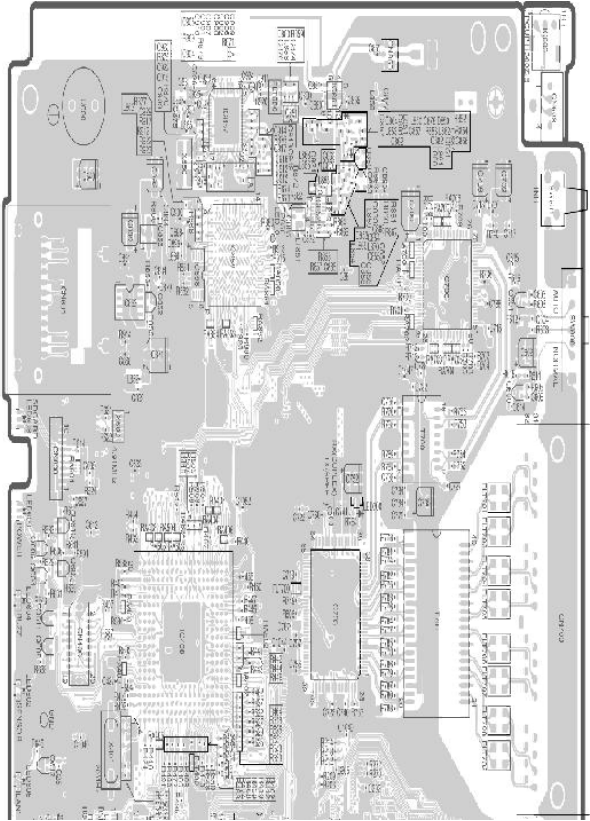


1.1. SUGGESTED PbF SOLDER

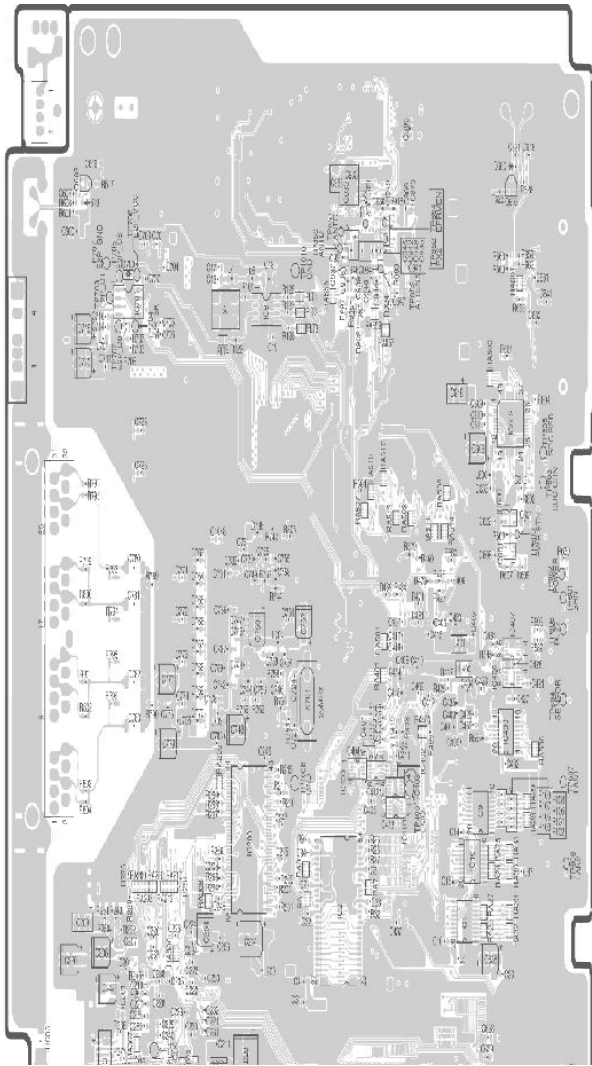
There are several types of PbF solder available commercially. While this product is manufactured using Tin, Silver, and Copper, (Sn+Ag+Cu), you can also use Tin and Copper, (Sn+Cu), or Tin, Zinc, and Bismuth, (Sn+Zn+Bi). Please check the manufacturer's specific instructions for the melting points of their products and any precautions for using their product with other materials. The following lead free (PbF) solder wire gauge are recommended for service of this product: 0.3mm, 0.6mm and 1.0mm.

1.2. HOW TO RECOGNIZE THAT Pb FREE SOLDER IS USED

COMPONENT VIEW (BL-WV10A)

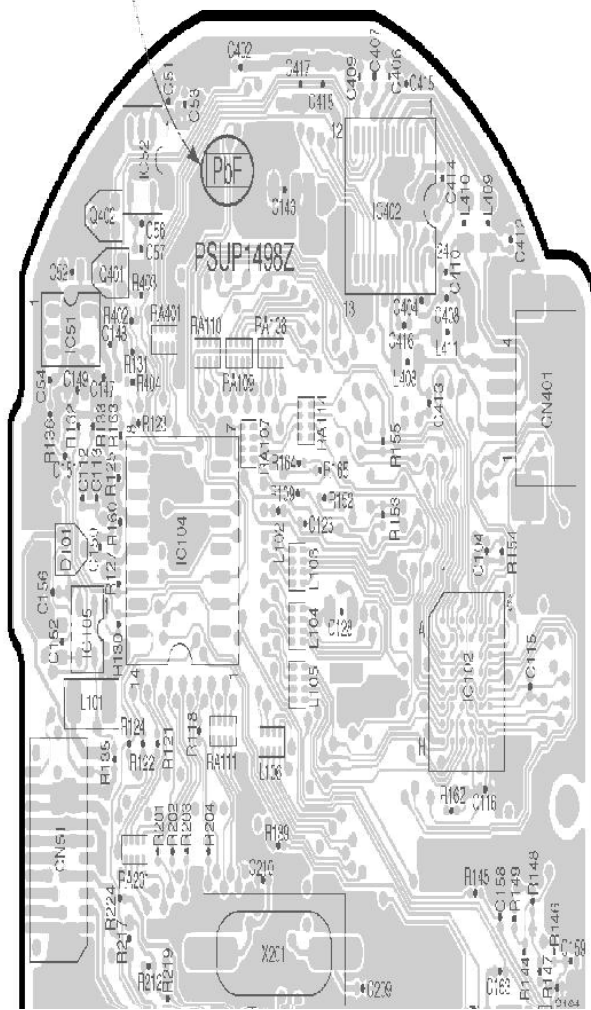


BOTTOM VIEW (BL-WV10A)

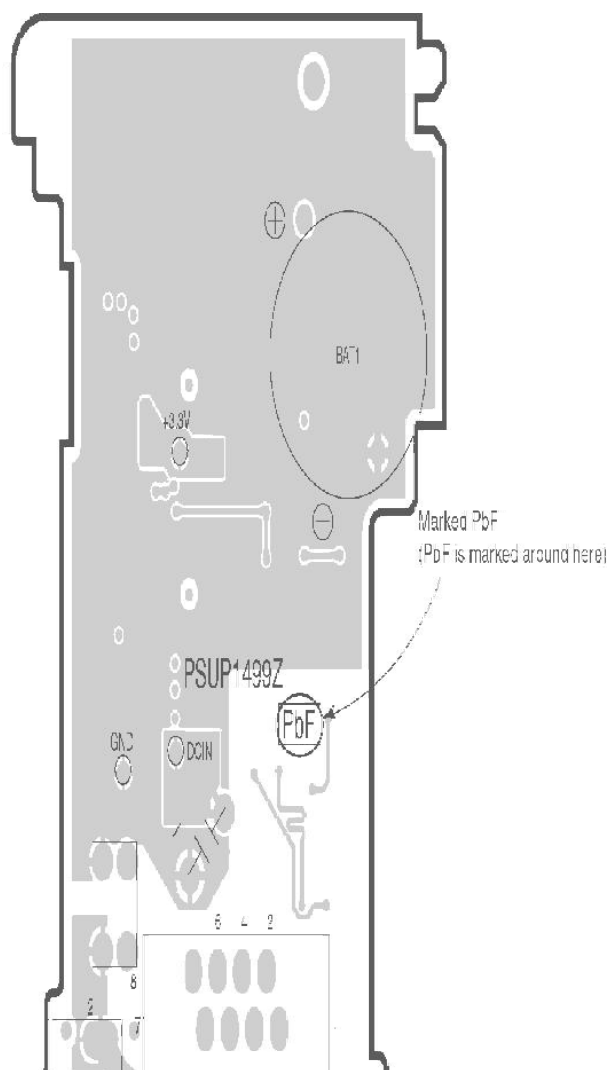


MAIN BOARD (BL-C30A)

Marked PbF (PbF is marked around here)

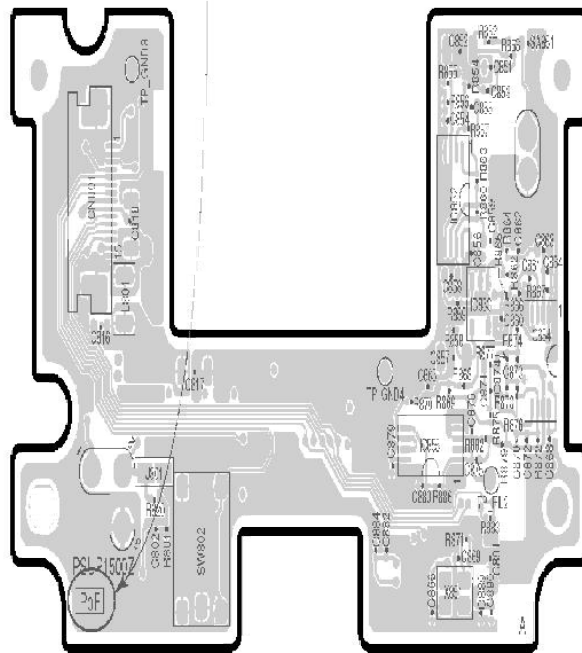


I/O BOARD (BL-C30A)



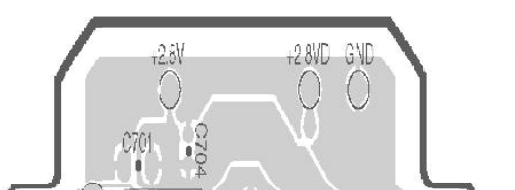
SUB BOARD (BL-C30A)

Marked PbF (PbF is marked around here)



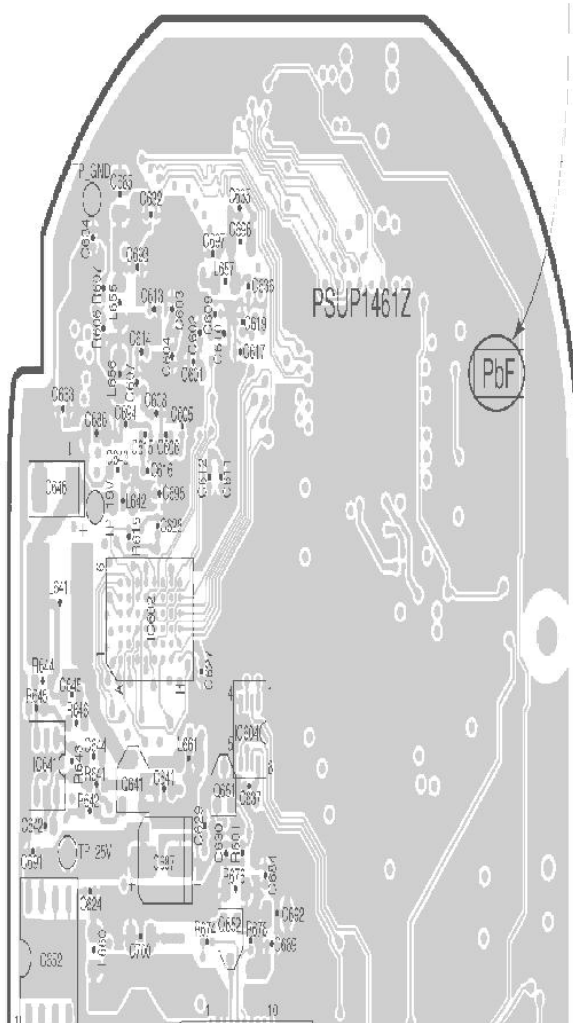
LENS BOARD (BL-C30A)

Marked PbF (PbF is marked around here)



RF BOARD (BL-C30A)

Marked PbF (PbF is marked around here)



2. FOR SERVICE TECHNICIANS

ICs and LSIs are vulnerable to static electricity.

When replacing, the following precautions will help to prevent recurring malfunctions.

1. Cover the plastic parts with aluminum foil.
2. Ground the soldering irons.

3. Use a conductive mat on the work-table.
4. Do not grasp IC or LSI pins with bare fingers.

3. CAUTION

3.1. SAFETY PRECAUTIONS

1. Before servicing, unplug the power cord to prevent an electrical shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, make the following insulation resistance test to prevent a shock hazard.

3.2. BATTERY CAUTION

Danger of explosion if the battery is replaced incorrectly. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to following caution:

Disposal or transportation of lithium batteries should be performed by permitted, in accordance with federal, state and local guidelines.

A battery continues to have no transportation limitations as long as it is separated to prevent short circuits and packed in strong packaging.

Commercial firms that dispose of any quantity of lithium cells should have a mechanism in place to account for their ultimate disposition. This is a good practice for all types of commercial or industrial waste.

When the lithium battery is exchanged, the clock settings are cleared. In this case, make clock settings again.

Recommend Type Number:

CR-1632/1HF (BAT1) Manufactured by MATSUSHITA

3.3. TRADEMARKS

- Adobe and Acrobat are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.
- Ethernet is either a registered trademark or a trademark of Xerox Corporation in the United States and/or other countries.

- Microsoft, Windows, Hotmail and ActiveX are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
- Pentium is a trademark or registered trademark of Intel Corporation or its subsidiaries in the United States and other countries.
- Screen shots reprinted with permission from Microsoft Corporation.
- All other trademarks identified herein are the property of their respective owners.

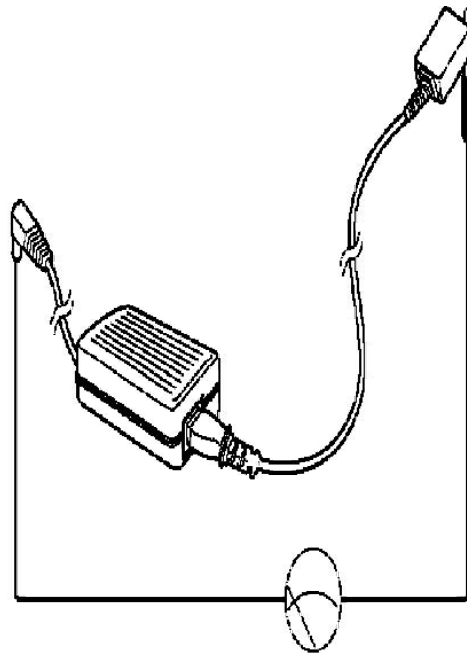
3.4. INSULATION RESISTANCE TEST

1. Unplug the AC power cord and short the two prongs of the plug with a jumper wire.
2. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screw threads, etc.

Note:

Some exposed parts may be isolated from the chassis by design. These will read infinity.

3. If the measurement is outside the specified limits, there is a possibility of shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.



Ohm meter

Resistance = more than $1\text{M}\Omega$ (at DC 500 V)

3.5. POWER CAUTION

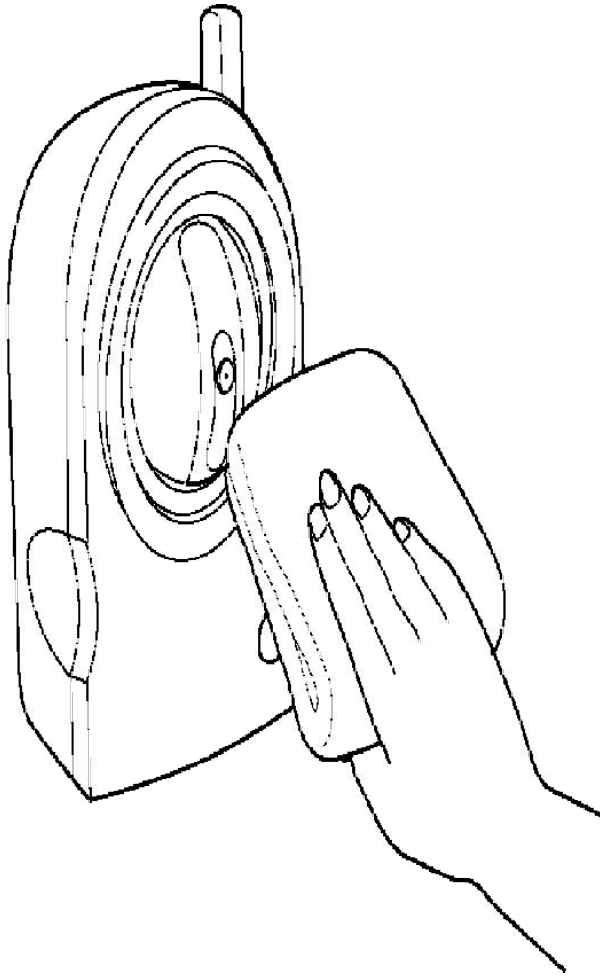
The power socket wall outlet should be located near this equipment and be easily accessible.

3.6. CLEANING

Clean the camera after the camera is turned off.

3.6.1. Cleaning the Main Unit

Clean the unit with a dry and soft cloth.

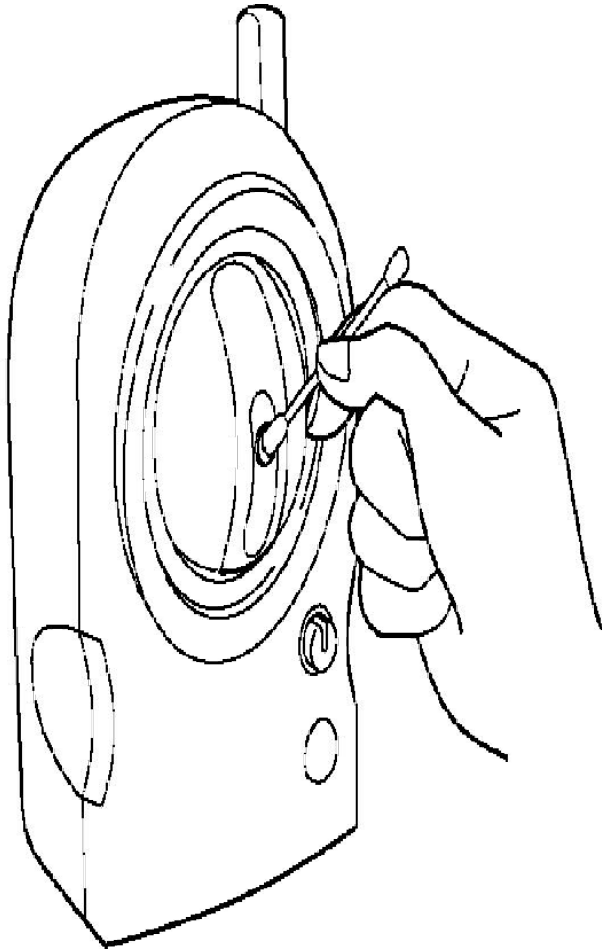


Note:

- **Do not use alcohol, polishing powder, cleanser, benzine, thinner, wax, petroleum products or hot water to wipe the camera. Also avoid pesticide, glass cleaner or hair spray. They may cause change in shape or color.**
- **Do not apply pressure to the pan/tilt portion of the camera. Any forced movement can damage the internal mechanism.**
- **If the pyroelectric infrared sensor has dust on it, it may not detect temperature differences. Keep the pyroelectric infrared sensor clean.**

3.6.2. Cleaning the Lens

If the lens has dust on it, the image may be unclear or out of focus.



Note:

Do not touch the lens directly. Fingerprints may cause an unclear image.

4. SPECIFICATIONS (BL-WV10A)

Main Unit:

LAN Interface

Items	Specifications
Number of ports	4 port
Connector type	8-pin modular jack (RJ-45)
Physical interface	IEEE802.3 (10BASE-T) IEEE802.3u (100BASE-TX) MDI/MDI-X with auto-detect

Wireless Interface

Items	Specifications
IEEE802.11g	
Transmission protocol	OFDM (IEEE802.11g standard)/DS-SS (IEEE802.11b compatible), half duplex
Transmission speed ([standard value] Mbps)	54/48/36/24/18/12/9/6 *(IEEE802.11g standard): automatic fallback
Frequency range (MHz)	2412 to 2462 (center frequencies)
Number of channels	11
IEEE802.11b	
Transmission protocol	DS-SS, half duplex
Transmission speed ([standard value] Mbps)	11/5.5/2/1 *(IEEE802.11b standard): (automatic fallback)
Frequency range (MHz)	2412 to 2462 (center frequencies)
Number of channels	11
Communication range	The range will depend on environmental conditions. The proximity of reinforced concrete structures, large metal objects, microwave ranges, and/or theft prevention devices can shorten the range. Obstructions (walls, furniture, equipment) can also shorten the usable range.

- The values displayed represent the theoretical maximums for wireless LAN standards, and do not represent actual data transmission speeds.

Video Output

Items	Specifications
Video format	NTSC
Output jack	Single jack
Output level	1.0 Vp-p (75 Ω)

User Interface

Items	Specifications
FACTORY DEFAULT RESET button	Restoration of default settings
Mode switch	Normal, Setup, Sequential Display
ALERT	Camera sensor notification
Indicator displays	Power (green/orange/red), Sensor (orange), ALERT (green), SD Memory Card (green/orange), Wireless (green), LAN 1 through LAN 4 (green)
Recording media	SD Memory Card

Other

Items	Specifications
AC adapter	AC110 V (60Hz) DC12 V (part number PQLV202Y) DC cord length: About 3.0 m (10 ft.) AC cord length: About 1.8 m (separate) Power consumption: 7.5 W
Antenna	Diversity antenna
Exterior dimensions	W x H x D: About 220 mm x 42 mm x 171 mm (8.6 in. x 1.6 in. x 6.7 in.) with antenna collapsed and no stand
Weight (Main Unit Only)	About 500 g (1.1 lb)
Operational environment	0°C~40 °C (32°F~104 °F) humidity between 20 and 85% (without condensation)
EM radiation shielding	FCC Part 15

Software:

Camera Viewer

Items	Specifications
Camera image display	Displays a maximum of eight camera images Video (motion JPEG): 640x480, 320x240 1 screen per 8 pages, 4 screens per 2 pages Camera pan/tilt operations, image size switching, resolution switching
Recording to and playing from SD memory cards	Movies (motion JPEG): 640 x 480, 320 x 240 Saved in QuickTime format Pictures (JPEG): 640 x 480, 320 x 240 Timer recording
Camera motion sensor support	Automatic switch to camera image at sensor input event sensor input triggers buzzer/LED notification Automated camera image recording at sensor input event

Setup

Items	Specifications
Quick Setup	Automatically performs necessary network and wireless settings for Panasonic cameras and routers

Wireless Terminal Feature

Items	Specifications
Security	WEP (64 bit/128 bit/152 bit), wireless stealth functionality (SSID suppression, connection denial/permissions through ANY key), MAC address filtering

Notice Regarding Wireless Communications

1. To avoid wireless communication interference and instability, do not use this product near the following devices, or change the wireless channel used by the BL-WV10A.

- Wireless transmitters (radio transmitters, cellular transmitters, etc.)
 - Wireless devices which operate at 2.4 GHz (security equipment, POS systems, cordless telephones, etc.)
 - Microwave ovens
2. Wireless communication range and quality may be affected if the following types of objects are located between or near this product and other wireless devices connected to this product. In the event that images do not refresh at a regular rate, become cut off, etc., relocate this product, the other wireless devices, or the obstacles (if possible) for more stable wireless communications.
- Metal door shutters
 - Walls made of concrete, stone, or brick, or walls which contain aluminium-based heat insulation
 - Multiple walls
 - Fire doors and glass
 - Steel racks or shelves
3. Place cameras and this product at least 2 m (6.5 ft.) away from radios. Do not connect cameras and this product to a power outlet used by a radio.

Frame rate

- Frame rate (frames per second, “fps”) may vary depending on the image being viewed by the camera, brightness, and other environment conditions, as well as network conditions such as distance between the BL-WV10A and the cameras, the number of cameras connected, network traffic, wireless network conditions, etc.
- For BL-C10A and BL-C30A, a maximum of 15 fps in LOW quality (resolution) and 7.5 fps in HIGH quality is possible.
- For HCM series cameras, a maximum of 30 fps in LOW quality and 12 fps in HIGH quality is possible.
- Network speed may decrease while the BL-WV10A is turned on and connected to cameras.
- The display size and brightness of the Monitoring Screen can be adjusted.

5. SPECIFICATIONS (BL-C30A)

Network Camera

Items	Specifications
Pan/Tilt Angle	Pan: -50° to +50°, Tilt: -40° to +10°
Number of Pixels	1/4-inch CMOS Sensor 320,000 pixels
Illuminance	1-10,000 lx
White Balance	Auto/Manual/Hold
Focus	Fixed 0.5m (20 inches) - Infinity
Caliber Ratio (F No.)	F2.8
Horizontal Viewing Angle	43°
Exposure	Auto

Other Specifications

Items	Specifications
Video Compression	JPEG (3 Levels)
Video Resolution	640 x 480, 320 x 240 (default), 160 x 120
Buffered Image *1	About 250 frames (320 x 240) with time display
Frame rate *2	Max. 7.5 frames/second (640 x 480) Max. 15 frames/second (320 x 240 or 160 x 120)
Supported Protocols	TCP, UDP, IP, HTTP, FTP, SMTP, DHCP, DNS, DDNS, ARP, ICMP, POP3, NTP
Message Transfer Condition	Pyroelectric Infrared Sensor or Timer
Image Transfer Method	SMTP, FTP
Interface	Wired: 10Base-T/100Base-TX Ethernet RJ-45 connector x 1 Wireless: IEEE 802.11b/g (Embedded)
Sensor Detection Method	Pyroelectric Infrared Sensor
Sensor Range	Horizontally About 30°, Vertically About 85°, Distance About 5 m (16.4 feet) (When the temperature is 20 °C [68 °F])
Indicator Display	Power/Network Communication/Camera operation/Ethernet link
Dimension (WHD)	About 98 mm (3.86 inches) x About 74 mm (2.91 inches) x About 73 mm (2.87 inches)
Weight	200 g (0.44 lb.) (Only the unit)
Power Supply	AC adaptor: Input 120 V AC, 60 Hz Output 12 V DC, 750 mA Consumption: About 4.5 W (6.4 W during pan/tilt scan)
Temperature	Operation: +5 °C (+41 °F) to +40 °C (+104 °F) Storage: +0 °C (+32 °F) to +50 °C (+122 °F)
Humidity	Operation: 20%-80% (No Condensation) Storage: 20%-90% (No Condensation)

Wireless Specifications

Items	Specifications
Communication mode (Communication Standard)	IEEE 802.11b, 802.11b/g, 802.11g exclusive
Data Transfer Mode	Direct Sequence Spectrum Spread (DS-SS), Orthogonal Frequency Division Multiplexing (OFDM)
Frequency Range	2.412-2.462 GHz
Channels	1-11
Security	WEP (64/128/152 bit), SSID

*1) The maximum number of frames changes depending on the image quality and what object you buffer.

*2) Frame rate changes depending on the network environment, the PC performance, the image quality and what object you view.

5.1. ABOUT PYROELECTRIC INFRARED SENSOR

(See Panasonic Network Camera support website at <http://panasonic.co.jp/pcc/products/en/netwcam/> for details about the pyroelectric infrared sensor.)

The sensor (pyroelectric infrared sensor) detects temperature differences with the infrared rays naturally emitted by human or animal bodies. The sensor trigger can activate buffering images to the internal memory or transferring images by E-mail or FTP. The detection range is about 30° horizontally, about 85° vertically and about 5-m (16.4 feet) distance. Since the detection range is easily affected by the environment temperature or how fast the object speed is, consider your mounting location.



Note:

- The sensor can easily detect temperature differences of objects moving sideways within the detection range, but cannot easily detect objects moving slowly towards the sensor. Mount the camera where the objects often pass across the detection range (see Figure 1).
- If the lens position does not match the sensor direction, the buffered or

transferred images may not capture the object detected by the sensor (see Figure 2). We recommend you to set the pan/tilt range to match the sensor direction or to restrict the user's access level to disable the pan/tilt operation.

Figure 1

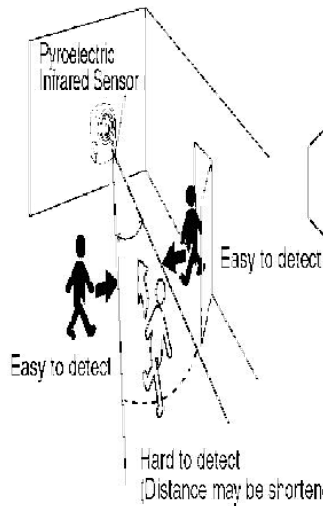
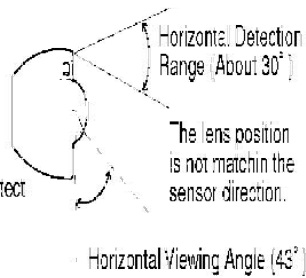
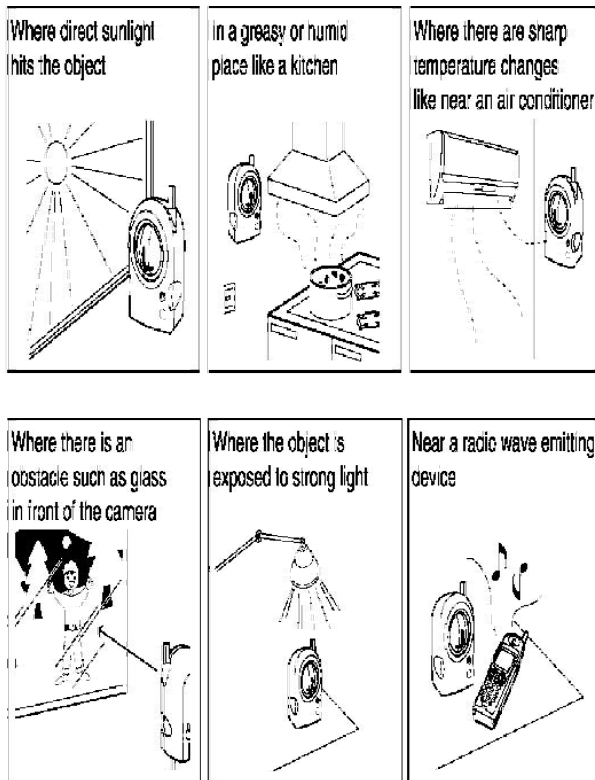


Figure 2



About Location

- If there is no temperature difference between human body and environment like in summer, the sensor may not detect anything.
- If the object is less than about 1 m (40 inches) away from the camera, the camera may detect the object outside the range.
- If the sensor is obstructed, the sensor does not detect anything. Remove the obstacle in front of the sensor.
- The sensor may malfunction in the following areas. Avoid these locations.



5.2. COLOR NIGHT VIEW MODE

- Color night view mode (a to-adjusted) enables the camera to display images even in 1 lx ill minance.
- 1 lx is the brightness about 2.5 m (8.2 feet) away from auxiliary fluorescent light. Color night view mode slows down the frame rate, and images may blur when viewing a moving object or using the pan/tilt operation.
- When viewing a dark image, Color Night View mode a tomatically starts. The image will be brighter, but the refresh interval may slow down and image quality may decrease.
- When the camera is aimed at a dark object when in Color Night View mode, specks of white or colored light may appear in the image. This is a characteristic of the CMOS image sensor. The product is not malfunctioning.

6. MAIN FEATURES

Wireless Communication

Network Camera corresponds to the wireless system based on IEEE 802.11b/g. Wireless installation will play an increasing role in flexible mounting.

Communication via Ethernet cable is also available. Encryption establishes the security on the wireless network.

Various remote monitoring features

- **Pyroelectric infrared sensor *1** detects temperature differences caused by a human body or animals.
- **Detection** can let camera transfer images by E-mail or FTP *2.
- **Color night view mode (auto-adjusted)** enables the camera to display images even in 1 lx ill minance *3.

Monitoring from PC or mobile phone

- **The camera images can be monitored over the Internet.**
- **Pan/Tilt operation** can move the lens horizontally from -50° to +50° and vertically from -40° to +10°.

Privacy mode

- **Privacy mode** hides the lens into the unit to protect privacy.
- **Pressing the privacy button** on the front of the camera switches privacy mode on or off with a single touch.

	Privacy	Monitoring	Purpose
Privacy feature	On	Disabled	Protecting privacy
Monitoring	Off	Enabled	Remote monitoring

Easy installation using UPnP (Universal Plug and Play)

When connecting the camera with a UPnP enabled router, the camera automatically configures its network settings.

* Some UPnP enabled routers cannot configure the camera automatically. In this case, the router needs to be configured manually. Ask the router manufacturer how to configure it. See Panasonic Network Camera support website at <http://panasonic.co.jp/pcc/products/en/netwkcaml/> for more information.

Supporting Viewnetcam.com service

Viewnetcam.com service allows you to access the camera over the Internet with your favorite domain name (e.g. bob.viewnetcam.com) instead of a global IP address.

* Viewnetcam.com service is the service for Panasonic Network Camera. See Viewnetcam.com website (<http://www.viewnetcam.com>) for more information.

Multi-Language Display

Top page, Single Camera and Multi-Camera page can be displayed in English, French, German, Italian, Spanish, Russian, Simplified Chinese or Japanese. If you select English or Japanese, all pages can be changed. But if you select other language, the Setup, Maintenance and Support pages are displayed only in English.

*1 The sensor uses pyroelectric effect. Due to the effects of environment temperature, direct sunlight or air conditioner, it may detect the temperature differences by mistake, or the detection range may be shortened.

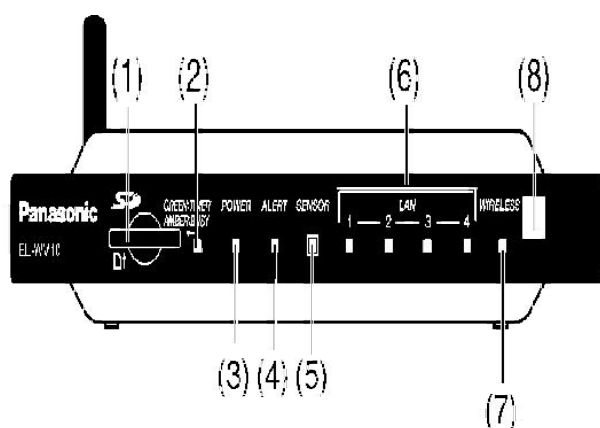
*2 It may take some time to transfer images depending on the network condition.

*3 1 lx is the brightness about 2.5 m (8.2 feet) away from auxiliary fluorescent light. Color night view mode slows down the frame rate, and images may blur when viewing a moving object or using the pan/tilt operation.

7. PARTS LOCATIONS (BL-WV10A)

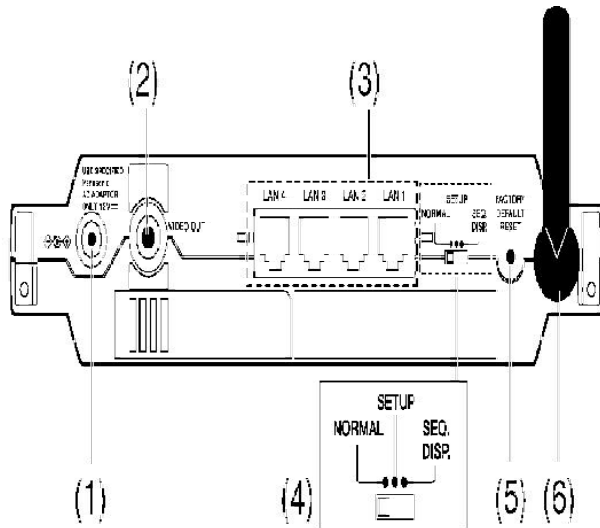
7.1. MAIN UNIT

Front Panel



1. SD Memory Card port
2. Timer/Busy indicator
3. Power indicator
4. Alert indicator
5. Sensor indicator
6. LAN indicators
7. Wireless indicator
8. Remote control sensor

Rear Panel



1. DC IN jack
2. Video output port
3. LAN ports
4. Mode switch
5. Factory default reset button
6. Antenna

Indicators

The indicators display the status of the BL-WV10A and network conditions.

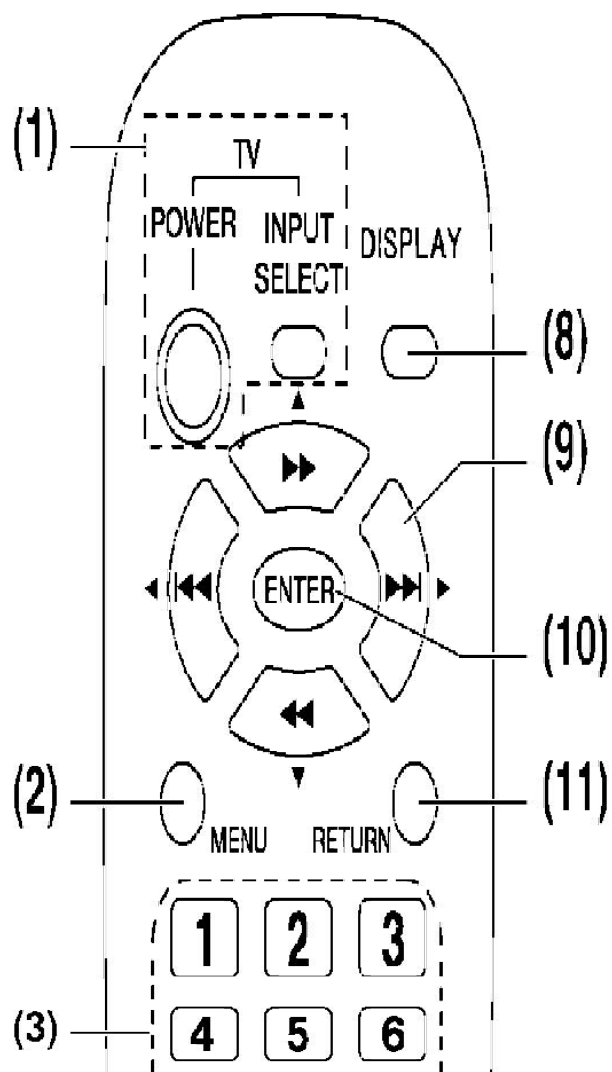
During Quick Setup

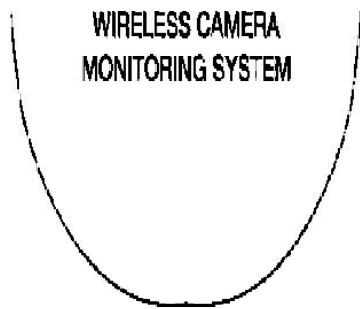
Indicator	Color	Description
Power	Amber (flashing)	Unit is in Quick Setup mode.
Wireless	Green	Quick Setup for a camera is in progress, or Quick Setup has been completed for the BB-HGW700A.
	Green (flashing)	Quick Setup has been completed for a camera.

During Normal Operation

Indicator	Color	Description
Timer/Busy	Green	Timer/Sensor recording has been set. Turn off by pressing [TIMER] on the remote control.
	Green (flashing)	Timer/Sensor recording cannot be turned on due to insufficient free space on the SD memory card. The indicator will flash for about 6 seconds. Also flashes when the timer recording setting is invalid (no SD memory card installed, etc.)
	Off	Timer/Sensor recording is not set. Turn on by pressing [TIMER] on the remote control.
	Amber (flashing)	Data is either being written to or read from the SD memory card.
Power	Green	The unit is turned on.
	Red (flashing)	A problem was detected during the power-on diagnostics.
	Amber (flashing)	Power-on diagnostics are in progress.
ALERT	Green	The buzzer is turned on. Turn off by pressing [ALERT] on the remote control.
	Off	The buzzer is turned off. Turn on by pressing [ALERT] on the remote control.
Sensor	Amber	The sensor is on.
	Orange (flashing)	The indicator will flash every 0.5 seconds when a camera is being detected by the sensor. After detection, the indicator will flash every second. To turn off the indicator.
	Off	The sensor is off.
LAN 1--4	Green	The unit is connected to wired cameras or to a router.
Wireless	Green	The unit is connected to wireless cameras.

7.2. REMOTE CONTROL





1. [POWER] and [INPUT]:

You can program the remote control to turn your TV on and off when the [POWER] button is pressed, and to change the TV's video input. You must first program your TV's manufacturer code.

2. [MENU]: Press while monitoring a camera to display the [MENU] screen.

3. Number keys: Depending on the current screen, used to enter numbers and text, or aim the camera at a preset position or at the sensor position.

4. [TIMER]: Turns the timer on and off.

5. [0]: Displays the camera list or switches to multi-camera display mode.

6. [STOP]: Stops recording and playback.

7. [PLAY/PAUSE]: Starts and pauses movie playback and picture display.

8. [DISPLAY]: Toggles through the different image data display modes while monitoring a camera

9. Navigator keys: Used to select on-screen items or aim the camera in a different direction.

10. [ENTER]: Depending on the current screen, selects the highlighted setting or item, saves the current setting, or aims the camera at the home position.

11. [RETURN] Returns to the previous or menu.

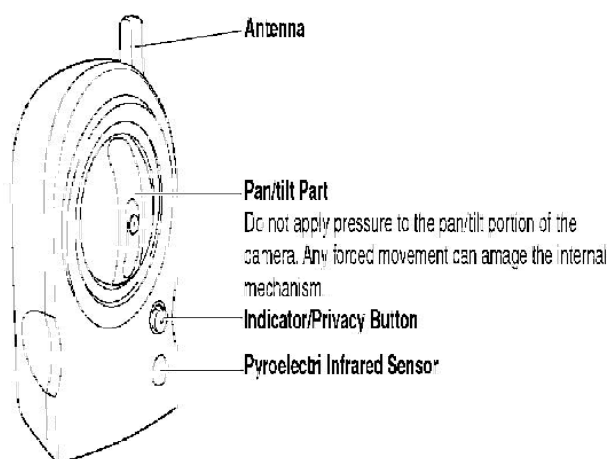
12. [ALERT]: Turns the alert on and off. The alert can be used to alert you to camera sensor detection.

13. [REC]: Press while monitoring a camera to record a movie.

14. [SNAPSHOT]: Press while monitoring a camera to take a picture.

8. PARTS LOCATIONS (BL-C30A)

8.1. FRONT VIEW



Privacy Button

To temporarily deactivate the camera, press the privacy button. Once pressed, the button changes from green to red. The video will be temporarily turned off, camera features become unresponsive and the viewed image turns to a gray screen. To return to normal operation, press the privacy button again. It should turn green within a few seconds. To restore video, click [Refresh] on the web browser. Privacy mode can also be controlled from mobile phones or PCs.

Indicator Display

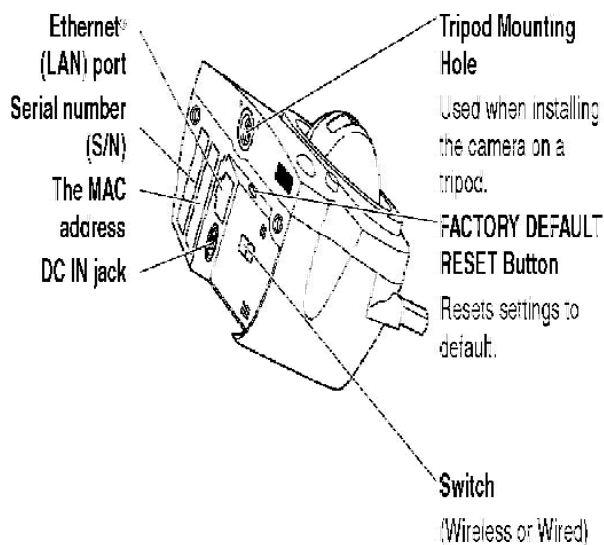
Power on	Not on the LAN	Orange → Orange blinking
	On the LAN	Orange → Orange and green blinking Green
Normal Operation *1		Green
Automatic Setup	Setting	Green blinking
	Finished setting	Green
Using DHCP	Getting IP address *2	Orange blinking Green blinking
	Got IP address	Green
Updating Firmware		Orange blinking
Pressing FACTORY DEFAULT RESET button		Orange blinking Turning off (The camera restarts about 1 minute later.)
UPnP Failure *3		Orange blinking (About a 2-second interval)
In Privacy Mode		Red
Internal Failure		Red blinking

*1) The indicator turns orange if the camera is not connected to the LAN.

*2) The indicator blinks orange if the camera is not connected to the LAN.

*3) When the sensor is active, the interval between blinks may increase.

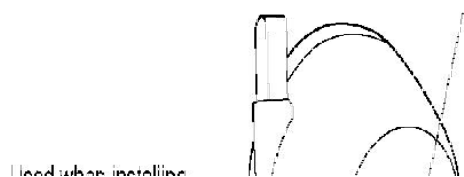
8.2. BOTTOM VIEW



8.3. REAR VIEW

Stand Mounting Hole

Used when installing the camera onto a wooden wall with a stand.

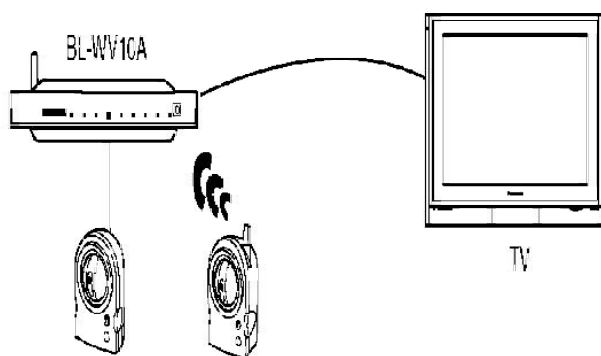


Note:

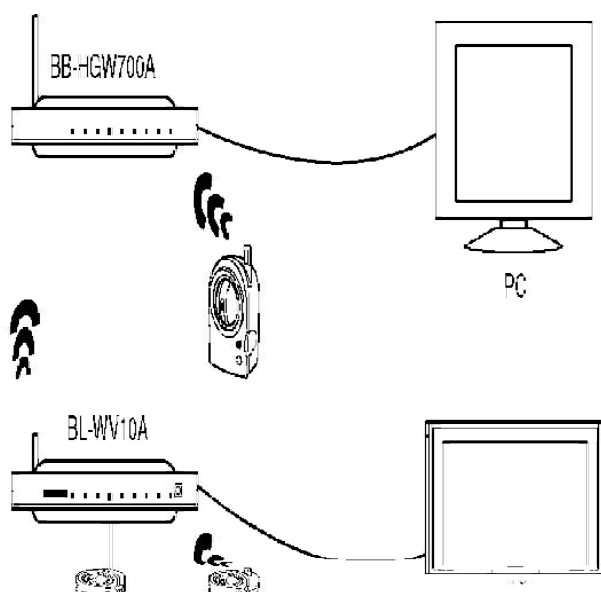
If the ceiling is made of wood, the camera can be installed on the ceiling. See Panasonic Network Camera support website at <http://panasonic.co.jp/pcc/products/en/netwkcaml/> for details.

9. HOW TO CONNECT (BL-WV10A)

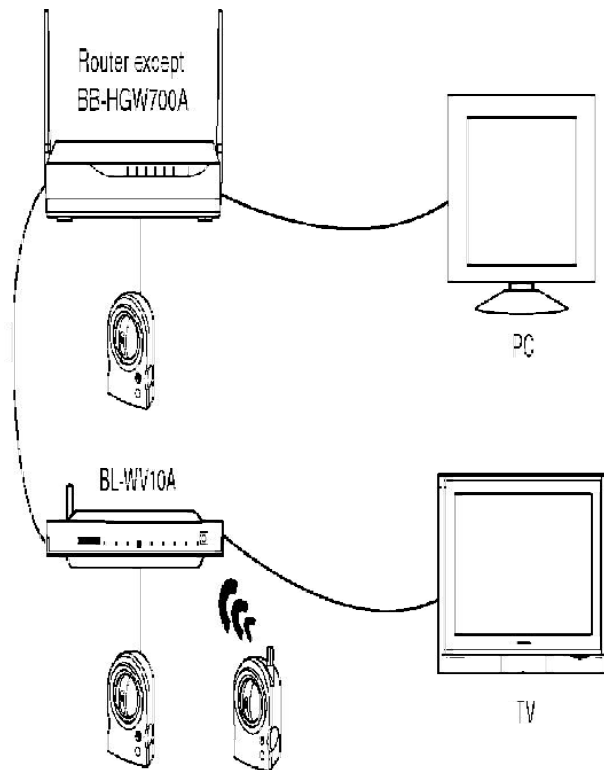
Connecting cameras directly to the BL-WV10A



Connecting to the BB-HGW700A (See Operating Instructions)



Connecting to the router except BB-HGW700A



Note:

- The only wireless router that can be used with the BL-WV10A is the Panasonic BB-HGW700A. All other routers require a wired connection.

10. CONNECTING YOUR NETWORK CAMERA (BL-C30A)

10.1. PREPARATION

Prepare the following before connecting the Network Camera.

- Set up software (Setup CD-ROM)
- PC to fulfill the system requirements.
- Ethernet Router or Wireless Router for LAN Connection.
- Ethernet cable (two pieces of Category 5 straight cable).

SYSTEM REQUIREMENTS

Your PC (Personal Computer) and network must meet the following technical specifications for the camera to work properly.

Item	Description
Operating System	Microsoft ® Windows ® XP Microsoft ® Windows ® 2000 Microsoft ® Windows ® Me Microsoft ® Windows ® 98SE
CPU	Pentium ® III (500 MHz or greater is recommended.)
Protocol	TCP/IP protocol (HTTP, TCP, UDP, IP, DNS, ARP, ICMP)
Interface	10/100 Mbps network card installed
Web Browser	Internet Explorer 6.0 or later (Not included on the Setup CD-ROM)

Note:

See Panasonic Network Camera support website at <http://panasonic.co.jp/pcc/products/en/netwcam/> for the latest information about web browser.

Abbreviations

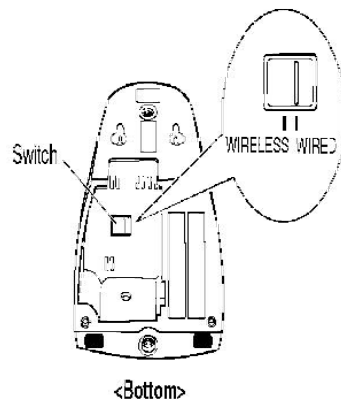
- **UPnP™** is the abbreviation for Universal Plug and Play.

10.2. CONNECT THE CAMERA TO YOUR ROUTER

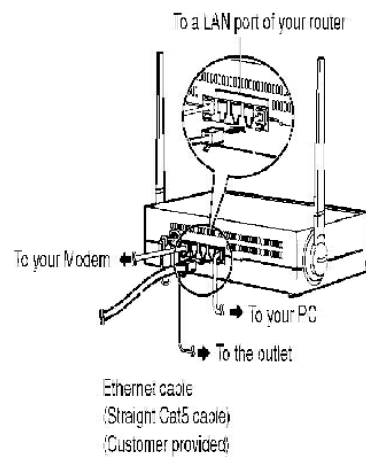
Connect the camera to your router with an Ethernet ® cable to set up the camera.

- **Before you begin the installation, the UPnP feature in your router needs to be enabled. Usually, the default setting disables this feature. For more info, please visit, http://panasonic.co.jp/pcc/products/en/netwcam/technic/rtr_setup/ or contact your router's manufacturer.**
- **These instructions assume your PC is already connected to the Internet and your home network includes a router that is UPnP (Universal Plug and Play) compliant.**
- **The camera will be connected to your router using a "straight" Cat5 network cable (customer-provided).**

1. Confirm that the switch on the bottom of the camera is set to wired.



2. Connect the Ethernet cable to your router.



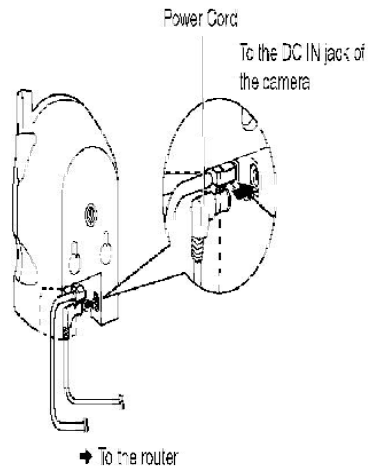
3. Connect the Ethernet cable to the camera.



10.3. TURN THE CAMERA ON

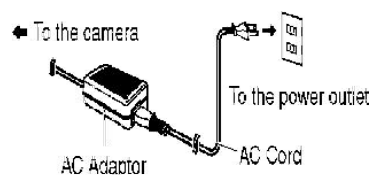
Inserting the AC adaptor to the outlet powers up the camera.

1. Connect the power cord from the AC adaptor to the DC In jack.



2. Connect the AC plug of the AC cord to the power outlet.

- When you operate the camera, the power outlet should be near the camera and easily accessible.
- Use only specified Panasonic AC adaptor PQLV202 (Order No.PQLV202Y).



3. After the lens moves (pan/tilt operation), confirm that the indicator lights green after a minute.

- If the indicator does not light green, see page 15 and 16 of the Installation/Troubleshooting.
- A noise can be heard during pan/tilt operation. This is normal.

10.4. SETUP THE CAMERA

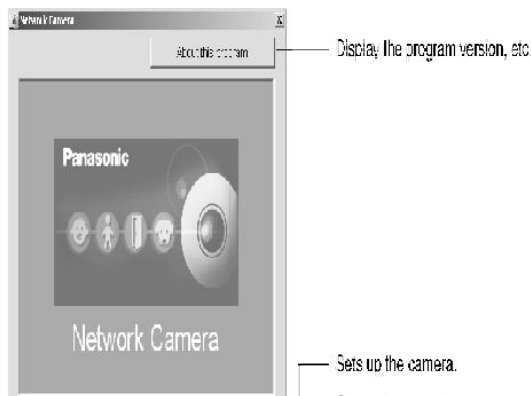
Important

- **To avoid any possible problems, temporarily disable any firewall or antivirus software.**
- **This procedure explains installation of the camera on the same network that your PC is part of.**
- **Before proceeding, close your web browser.**

1. Insert the Setup CD-ROM into the CD-ROM drive of the PC.

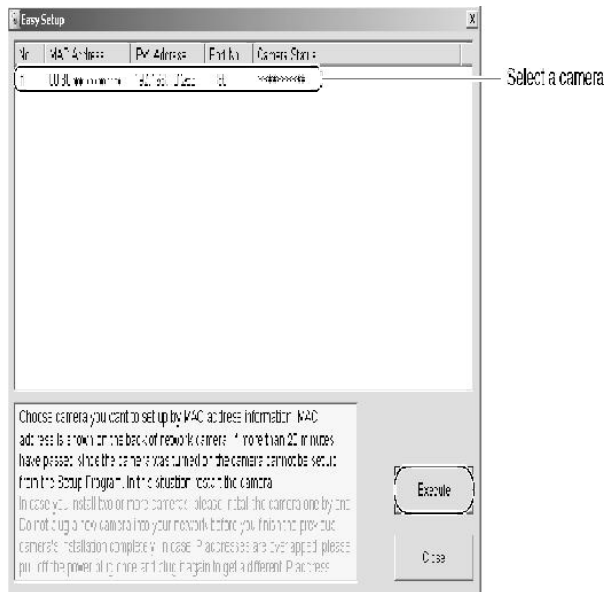
(If the Network Camera Setup window is not displayed automatically, double-click "Setup.exe" file on the Setup CD-ROM.)

2. Click [Camera Setup].



3. Select the camera to set up and click [Execute].

- **This program searches for the cameras that are connected to the router and displays the MAC Addresses, IP addresses and Port Numbers.**



- When searching for multiple cameras, the cameras can be identified with the MAC Addresses labeled near the Ethernet (LAN) port of the cameras.

Note:

- If more than 20 minutes have passed since the camera was turned on, the camera cannot be set up from the Setup Program. In this situation, restart the camera.
- The Setup Program may not list any cameras due to your firewall or antivirus soft-ware settings on your PC. If you cannot disable your firewall or antivirus software, you can set up the camera entering the camera MAC address.

4. Click [Automatic setup (Local Access Only)].



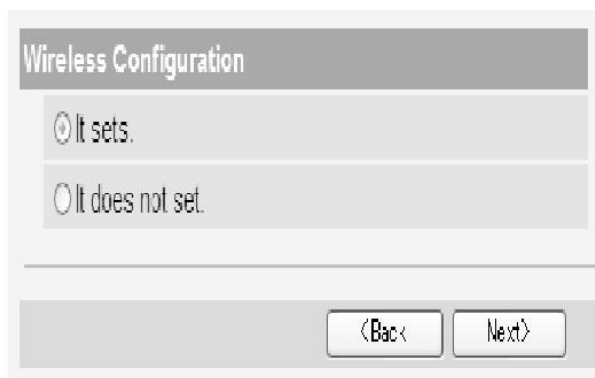
- For the first time installation or after pressing the Factory Default Reset button, only [Automatic Setup (Local Access Only)] can be selected. To set up the camera with Static or DHCP settings, after performing the [Automatic Setup (Local Access Only)], run the Setup Program again and select [Manual Setup].

5. Enter the user name and password, and click [Save].

6. The Enter Network Password window is displayed. Enter the user name and password that were set, and click [OK].

7. To set the Wireless Configuration, check [Enable] and click [Next>].

- When [Disable] was selected, skip to step 9.

A screenshot of a 'Wireless Configuration' dialog box. The title bar is grey and contains the text 'Wireless Configuration'. Below the title bar, there are two radio button options. The first option is selected and is labeled 'It sets.'. The second option is labeled 'It does not set.'. At the bottom of the dialog box, there are two buttons: '< Back' and 'Next >'.

Wireless Configuration

☒ It sets.

☐ It does not set.

< Back Next >

- The Wireless Configuration can also be set at [wireless] in the Setup Page.

8. Set the Wireless Configuration.

Wireless Configuration

1 — SSID: [Blank field]

2 — Communication mode: 802.11b, 802.11b/g, 802.11g exclusive

3 — Encryption: No encryption

4 — WEPKey1: [Blank field], WEPKey2: [Blank field], WEPKey3: [Blank field], WEPKey4: [Blank field]

[Back] [Next]

1. Set the SSID.

Set the name of the wireless network.

2. Select the Communication mode.

They are IEEE Communication modes. Select the same Communication mode as that of the router to which the camera is connected.

802.11b (IEEE802.11b) : Only 802.11b wireless router can be connected.

802.11b/g (IEEE802.11g) : Either 802.11b or 802.11g router can be connected.

802.11g exclusive (IEEE802.11g) : Only 802.11g router can be connected.

3. Select encrypting or not encrypting.

Selecting WEP can encrypt data within the wireless LAN.

WEP : Encrypting (setting WEP) makes it difficult for unauthorized users to read data within the wireless LAN, even if they can receive it. To encrypt data, set the same encryption key to every terminal within the wireless LAN. There are 3 kinds of encryption key: 64 bit, 128 bit and 152 bit. Security level of encryption increases in

9. When the Single Camera page is displayed, the setup is completed.

- If Security Warning window is displayed to install ActiveX Controls, click [Yes].

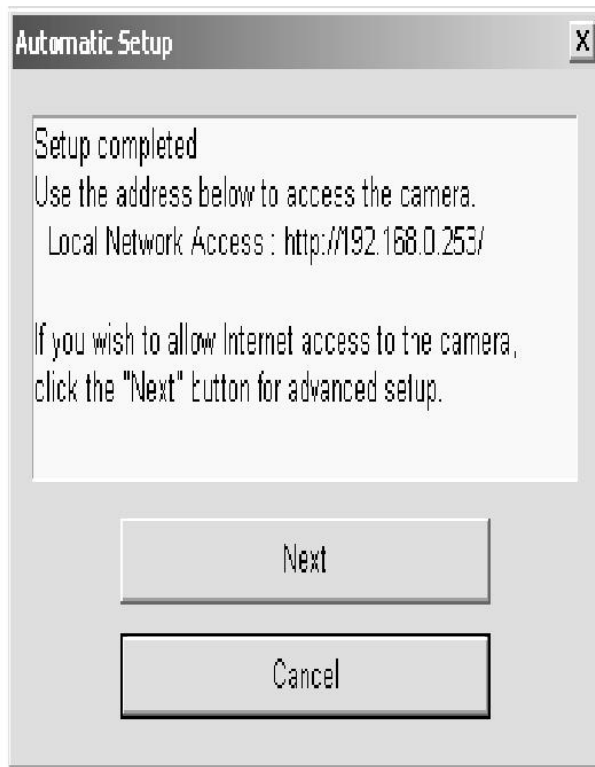


- The image is a simulated screen image.

Note:

Check [Every visit to the page] for "Temporary Internet files" on your web browser. If it is not checked, the camera may display old images.

9. Click [Next] to set up the Internet access to the camera and go to step on the next page..



- Click [Cancel] and go to 7.6. **CONFIRMING THE WIRELESS LANSETUP**, if you mount the camera.

10.5. TO SET UP INTERNET ACCESS TO THE CAMERA

1. Select the camera on the camera list to set up the Internet access and click [Execute].
- This program searches for the cameras that are connected to the router and displays the MAC Addresses, IP addresses and Port Numbers.

- When searching for multiple cameras, the cameras can be identified with the MAC Addresses labeled near the Ethernet (LAN) port of the

cameras.

Note:

If more than 20 minutes have passed since the camera was turned on, the camera cannot be set up from the Setup Program. In this situation, restart the camera.

2. Click [Automatic Setup (Internet Access)].



- For the first time installation or after pressing the Factory Default Reset button, only [Automatic Setup (Local Access Only)] can be selected. To set up the camera with Static or DHCP settings, after performing the [Automatic Setup (Local Access Only)], run the Setup Program again and select [Manual Setup].

3. The Enter Network Password window is displayed. Enter the username and password that were set, and click [OK].



4. To enable access over the Internet, check [Enable]. Not to enable access over the Internet, check [Disable]. And click [Next>].



- If you select [Disable], skip to step 8.

Registration with the "Viewnetcam.com FREE DDNS service"

By registering with the Viewnetcam.com FREE DDNS service, you can create a personalized web address at which your camera's live video can always be found on the Internet. For detailed information, access "<http://www.viewnetcam.com>".

5. To register with the "Viewnetcam.com FREE DDNS service", check [Register with Viewnetcam.com] and click [Next>].



- When [Do not register with Viewnetcam.com] was selected at step 5, skip to step 8.

6. The Enter Network Password window is displayed. Enter the user name and password that were set, and click [OK].

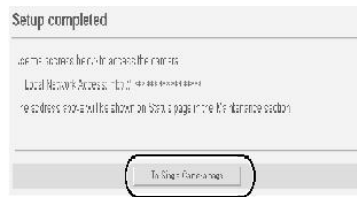
7. After a while, the "Viewnetcam.com FREE DDNS service" website is displayed. Follow the displayed instructions for registration.

- If the message "Failed to configure the router's Port Forwarding by UPnP" is displayed, your router may not support UPnP or UPnP is not enabled. Enable your router's UPnP or set Port Forwarding manually following the router's manual and try Automatic Setup again. For more information about setting up a router, refer to the Panasonic Network Camera support web-site at http://panasonic.co.jp/pcc/products/en/netwcam/technic/rtr_setup.
- If the message "Failed to register with Viewnetcam.com." is displayed, con-firm that the router is connected to the Internet.

8. When "Setup complete" is displayed, click [To Single Camera page].

- When [Enable] was selected at step 4.

- When [Disable] was selected at step 4.



Note:

- The port number must be specified at the end of camera URL.
For example
Using port 80: **http://(Cameraname).viewnetcam.com or http://IP Address**
Using any other port: **http://(Cameraname).viewnetcam.com:Port Number or http://IP Address:Port Number**
 - The URL for the local network access may be different from the one set up on the previous page.
9. When the Single Camera page is displayed, the setup is completed.
- If **Security Warning** window is displayed to install **ActiveX Controls**, click **[Yes]**.



- The image is a simulated screen image.

Note:

Check **[Every visit to the page]** for "Temporary Internet files" on your web browser. If it is not checked, the camera may display old images.

10.6. CONFIRMING THE WIRELESS LANSETUP

After setting each item for the wireless LAN, confirm that the camera works correctly.

1. Unplug the Ethernet cable and turn off the power (disconnect the AC plug).
2. Set the switch on the bottom of the camera to wireless.
3. Turn on the power by connecting the AC plug to the power outlet.

- The camera switches from wired to wireless.

4. Start up the web browser on the PC.

5. Enter "http://IP address (or URL):Port No." in the address field and press [Enter].

(When port number is 80 (default), you do not need to enter port number.)

- When the following Top Page is displayed, the wireless LAN setup is successful.



- If the Top Page was not displayed, the settings for the camera are not identical with those for the router. Check the settings by using wired connection.

If the settings are correct and you use a proxy server, set the web browser not to access the proxy server.

If the Top Page is not displayed even after trying these methods, contact the retailer.

- It takes about 1 minute for the new settings to be effective.
- It is not possible to access the camera simultaneously by both wired and wireless connection.
- Enter both the MAC addresses for the camera itself and the camera's wireless module to enable the MAC address filtering

feature on the wireless router. The wireless module MAC address is one value higher than the camera MAC address.

11. DISASSEMBLY INSTRUCTIONS (BL-WV10A)

11.1. HOW TO REMOVE BOTTOM CABINET

- | | |
|---|--|
| <ol style="list-style-type: none">1. Remove two Screws (A).2. Remove Bottom Cabinet. | |
|---|--|

11.2. HOW TO REMOVE MAIN BOARD AND ANTENNA

- | | |
|---|--|
| <ol style="list-style-type: none">1. Remove five Screws (B).2. Remove the solder of Antena Cable (two point A and C).3. Remove Main Board.4. Remove Antenna. | |
|---|--|

12. DISASSEMBLY INSTRUCTIONS (BL-C30A)

12.1. HOW TO REMOVE RF BOARD

1. Remove two Screws (A). And remove the Cabinet Cover.	
2. Remove Screw (B) and Antenna Cable.	

3. Remove Antenna Cable from RF Board, and remove RF Board from Cabinet body.

12.2. HOW TO REMOVE MAIN BOARD AND I/O BOARD

- 1-3 are the same as 8.1. HOW TO REMOVE RF BOARD.

4. Remove three Screws (B).

5. Remove Main Board and I/O Board form Cabinet Body.

- | | |
|--|--|
| <p>6. Remove Sub Flat Cable from Main Board.</p> <p>7. Remove Main Board from I/O Board.</p> | |
|--|--|

12.3. HOW TO REMOVE SUB BOARD

- 1-3 are the same as [HOW TO REMOVE RF BOARD](#).
- 4, 5 are the same as [HOW TO REMOVE MAIN BOARD AND I/O BOARD](#).

- | | |
|--|--|
| <p>6. Remove two Screws (B).</p> <p>7. Remove Antenna from Cabinet Body.</p> | |
|--|--|

- | | |
|--|--|
| <p>8. Remove five Screws (B).</p> <p>9. Remove Eye Block, Pan Motor Angle, Connect Angle and Washer.</p> | |
| <p>10. Remove two Screws (B).</p> <p>11. Remove Sub Flat Cable from Sub Board.</p> | |

12.4. HOW TO REMOVE LENS UNIT

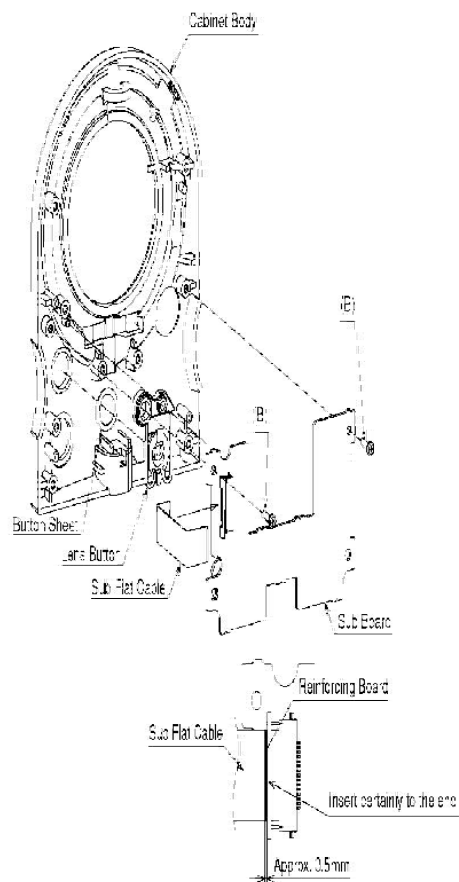
- 1-3 are the same as 8.1. **HOW TO REMOVE RF BOARD.**
- 4, 5 are the same as 8.2. **HOW TO REMOVE MAIN BOARD AND I/O BOARD.**
- 6-9 are the same as 8.3. **HOW TO REMOVE SUB BOARD.**

<p>10. Remove two Screws (B).</p> <p>11. Remove Tilt Motor Unit from Eye Block.</p> <p>12. Remove two Spacers, Pan Gear and Pan Motor Unit from Eye Block.</p>	
<p>13. Remove two Screws (B).</p> <p>14. Remove Eye Left Cover, Eye Center Cover and Eye Right Cover from Eye Block.</p>	

13. THE CAUTIONS AT THE TIME OF ASSEMBLY (BL-C30A)

13.1. SUB FLAT CABLE INSERTION INSTRUCTION

Put together Lens Button, Button Sheet, and Sub Board in a Cabinet Body, and fix with screws (B).
Insert Sub Flat Cable into connector.



* Direction of the lens of the pyroelectric infrared sensor

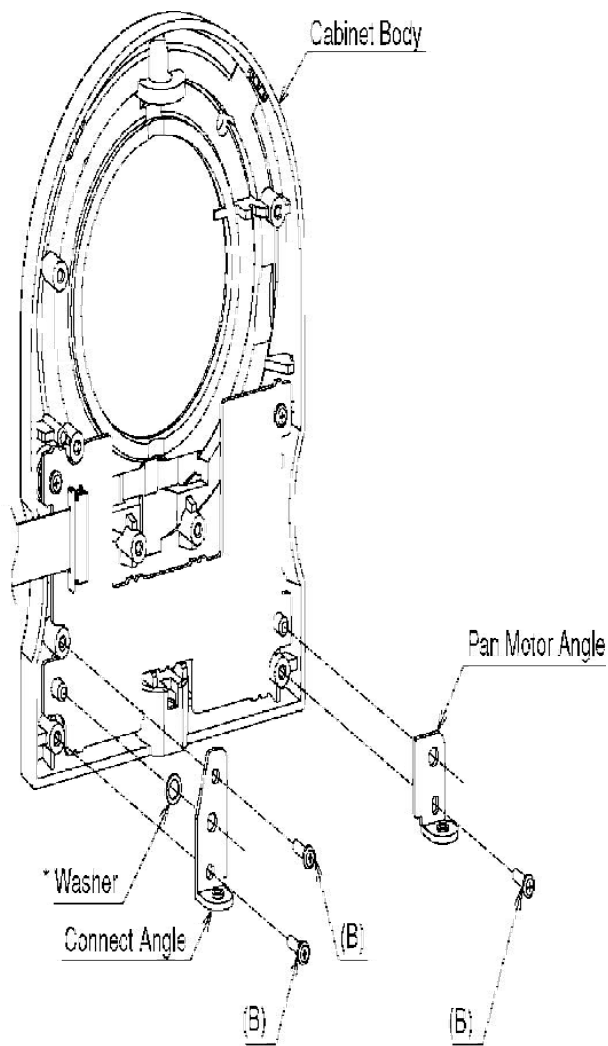


13.2. ASSEMBLING INSTRUCTION OF WASHERS

Attach Pan Motor Angle, Connect Angle, and washer to Cabinet Body and fix with screws (B).

Caution

After work, check visually that a spring washer is attached without fail.

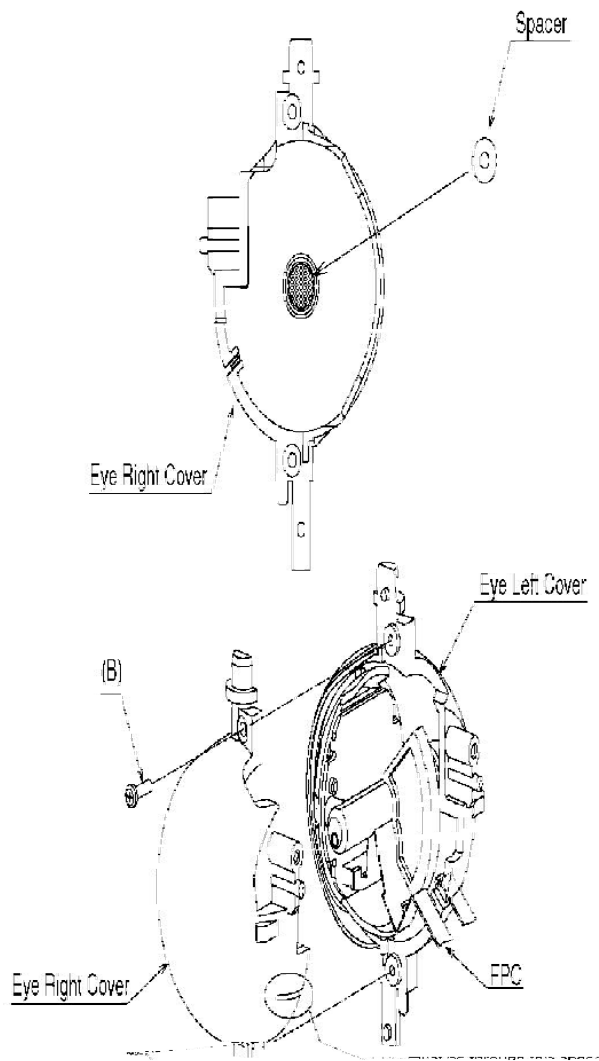


13.3. ASSEMBLING INSTRUCTION OF EYE BLOCK

Insert Spacer into the boss of Eye Right Cover, then fix with Eye Left Cover and Screws (B).

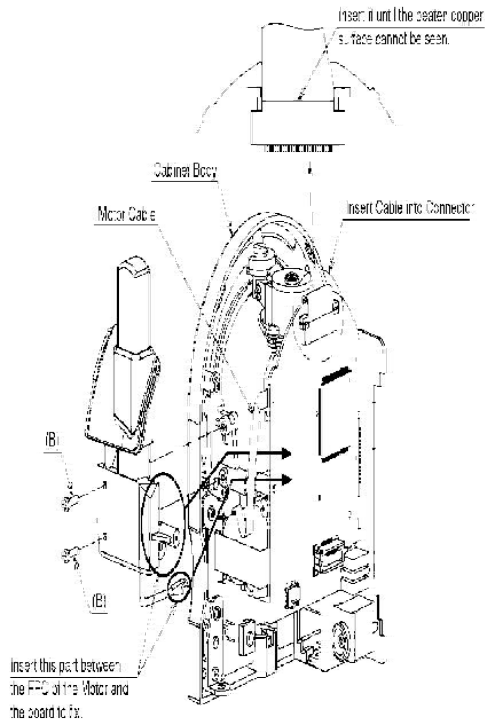
Caution

After inserting the Spacer, the Lens Unit should be in the Eye Right Cover position for assembly to prevent the Spacer from dropping out.



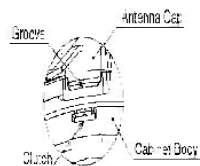
13.4. ASSEMBLING INSTRUCTION OF PAN MOTOR UNIT CABLE

1. Insert the Sub Flat Cable into the Main Board, and mount the Main Board and the Sub Board to the Cabinet Body and fixing it with Screws.
2. Insert the Cable of the Pan Motor to the Jig Board and turn on the power to of the board to check the home position operation of the Pan. If a step-out occurs during the home position operation, it is judged as being NG. After the check, take out the Pan Motor Cable.



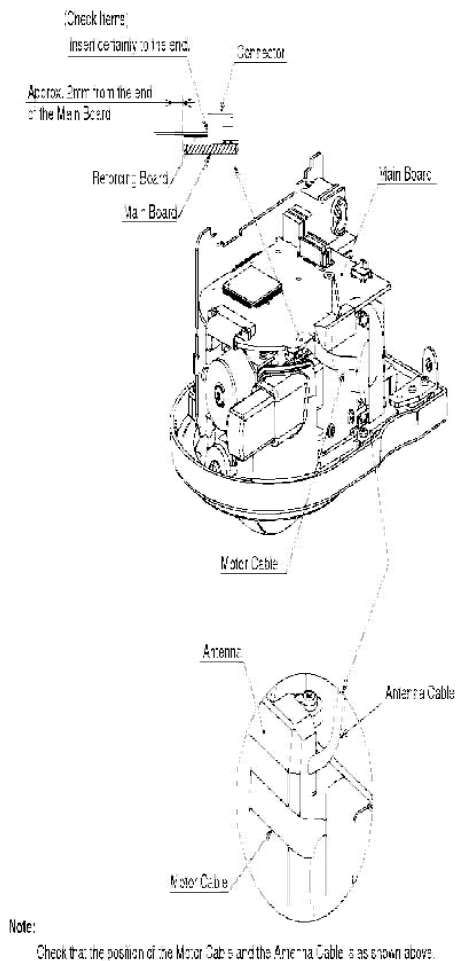
Note:

Before fixing the Antenna to the Cabinet Body, check that the corner of the Cabinet Body fits to the groove of the Antenna Cap securely.



13.6. ASSEMBLING INSTRUCTION OF ANTENNA CABLE

1. Check that the Motor Cable is inserted properly.
2. Check the alignment of the Motor Cable.



14. TROUBLE SHOOTING GUIDE (BL-WV10A)

- Press the Factory default reset button to reset to the original defaults.
- Connect the PC to each LAN1~4 port with the LAN cable.
- Insert the wireless network card (802.11b/g) into the PC.
(Confirm that the BL-WV10A unit and the wireless network card are placed in such a way that radio waves can travel between them)
- Set up your PC.

14.1. PC SETUP

System requirements

- A notebook PC with a CardBus slot and Windows XP installed as the operating system

A wireless LAN card

- A CardBus wireless LAN card (802.11b/g compatible)

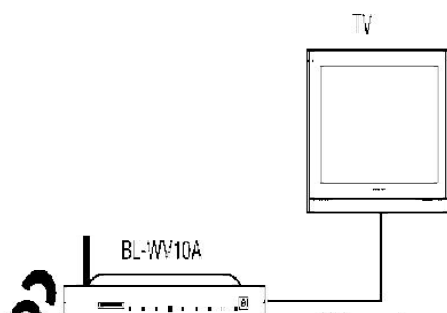
14.1.1. LAN-connected PC

IP address:	192.168.0.1
Net mask:	255.255.255.0
DNS:	Not available
Default gateway:	Not available

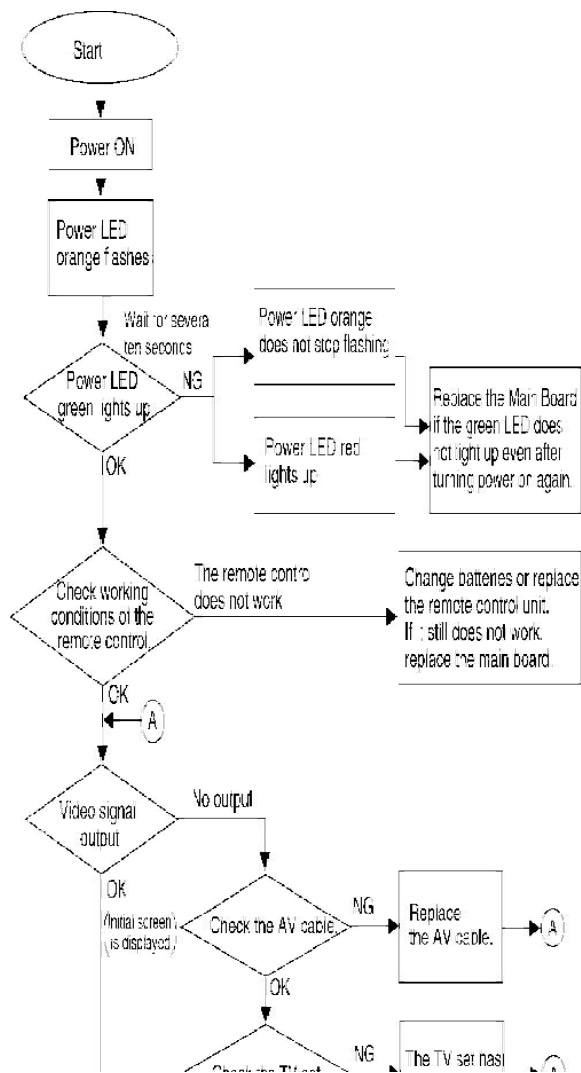
14.1.2. Wireless connected PC

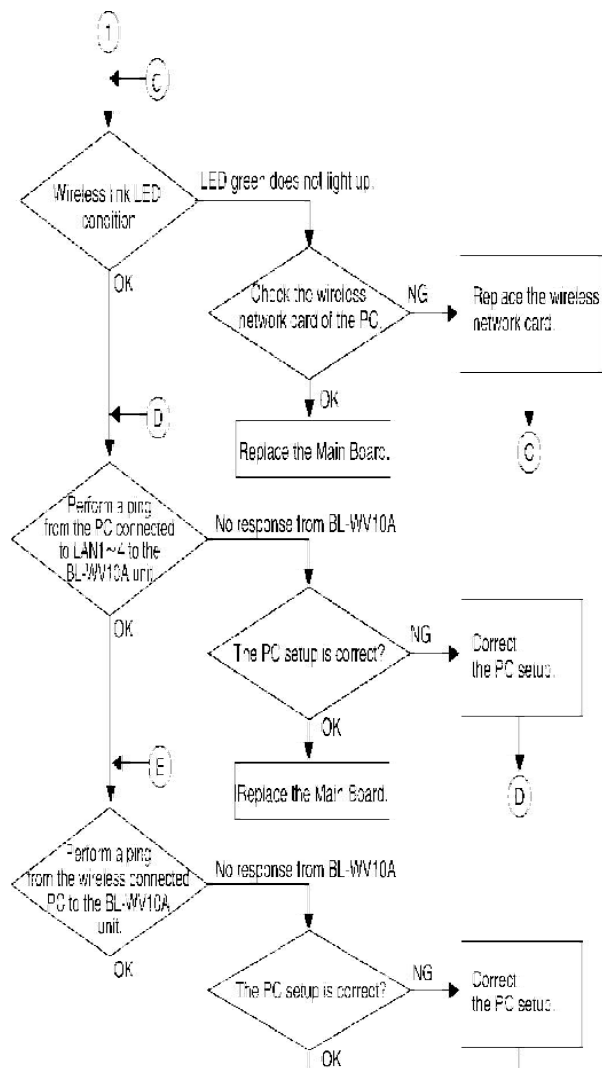
IP address:	192.168.0.2
Net mask:	255.255.255.0
DNS:	Not available
Default gateway:	Not available
SSID:	Refer to the label on the underside of the unit.
128 bit encryption (WEP) key :	Refer to the label on the underside of the unit.
Communicate mode:	Infrastructure

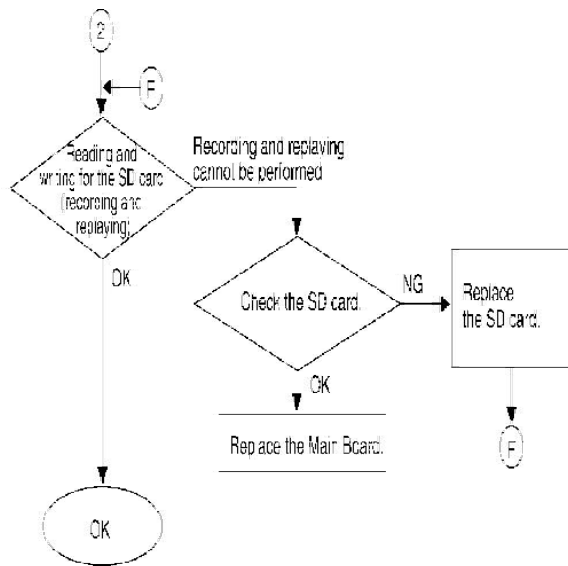
14.1.3. The method of connection for troubleshooting



14.2. TROUBLE SHOOTING FLOW CHART







* For performing a ping
 Select "Start" menu—"Program"—"MS-DOS prompt".
 'C:\windows> ping 192.168.0.250 <Enter key>'
 * When the ping is successful
 "Reply from 192.168.0.250: byte=32"
 * When the ping is not successful
 "Request timed out."

14.3. TROUBLE SHOOTING 2

If after turning on the power it does not operate normally, an error code below appears or a alert sounds, the main board should be replaced.

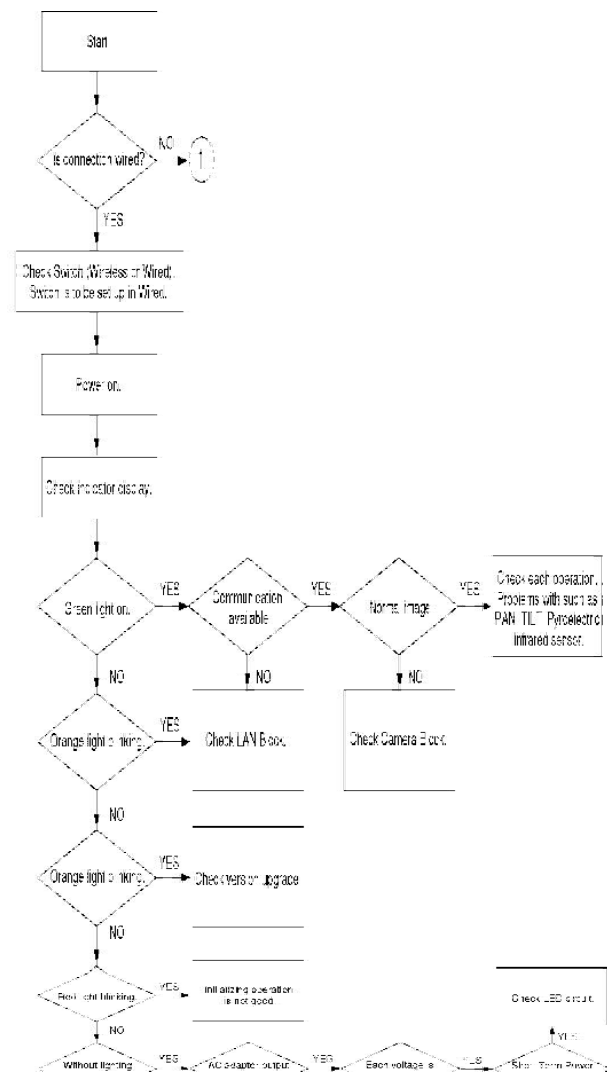
There is a problem with the unit.
Please note the error code below and
contact a Panasonic service center
for servicing.

Error Code : **F**

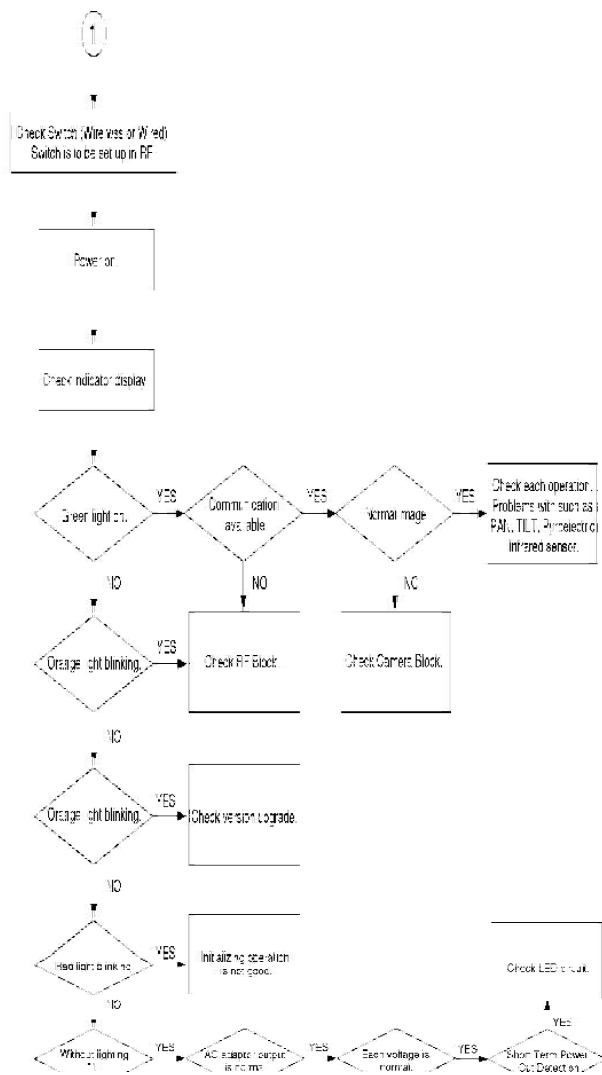
Description of an error	Error code	Number of buzzer sounds	Areas likely to malfunction
SDRAM error	—	3	IC1, IC2 or the peripheral
DM270 error	—	4	IC203 or the peripheral
H8 microprocessor error	F30	—	IC602 or the peripheral
EtherLAN error	F40	5	IC700 or the peripheral
SD error	F50	5	IC606 or the peripheral
System partition error	F91	6	MAC address rewrite
Kernel boot error	F99	6	IC408, IC4 or the peripheral

15. TROUBLE SHOOTING (BL-C30A)

15.1. STARTING UP OPERATION

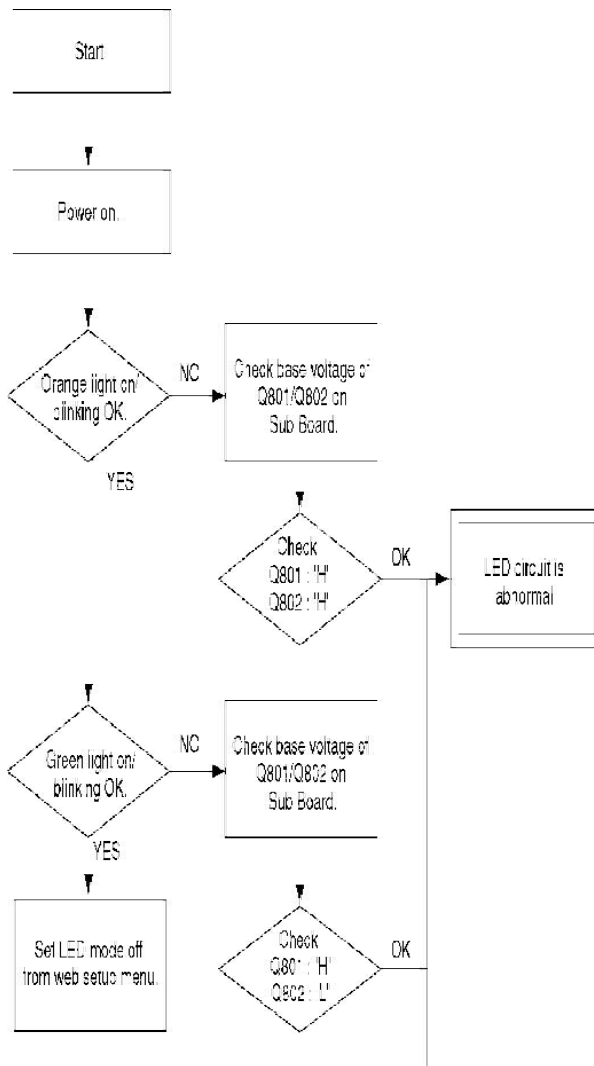


***1 It does not turn on, when LED mode is "OFF" on web setup menu.**



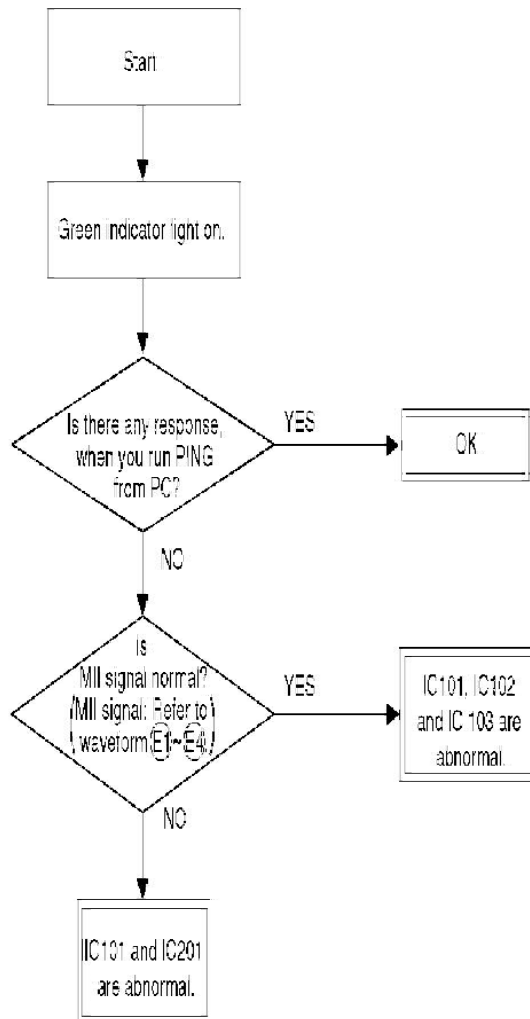
*1 It does not turn on, when LED mode is "OFF" on web setup menu.

15.2. LED CIRCUIT CHECK

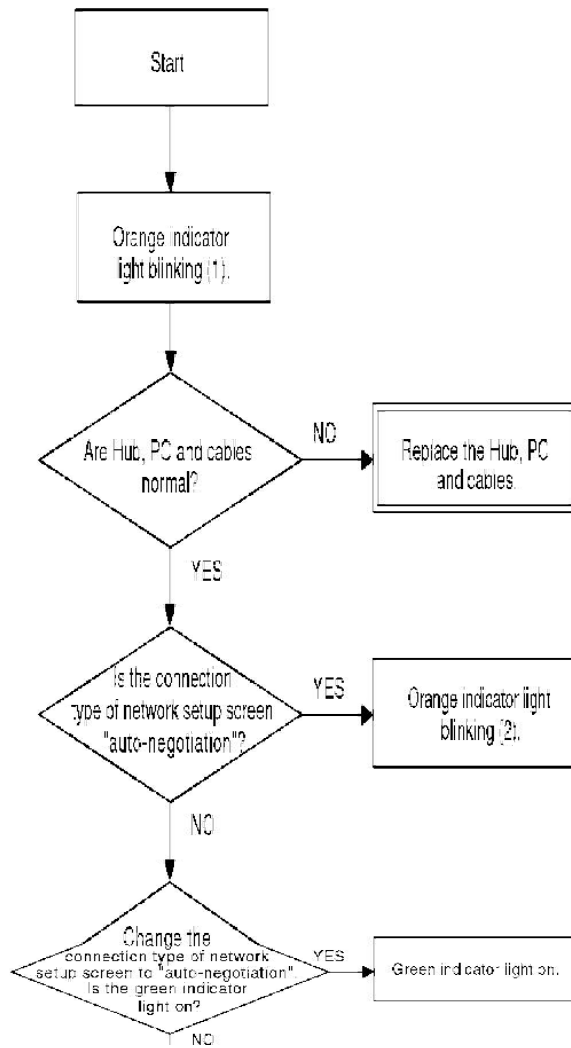


15.3. LAN BLOCK CHECK

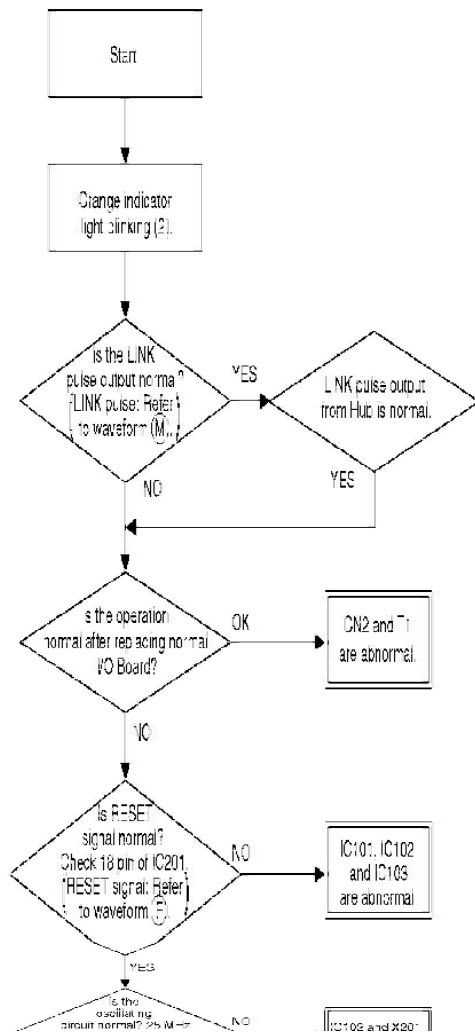
15.3.1. Green Light On



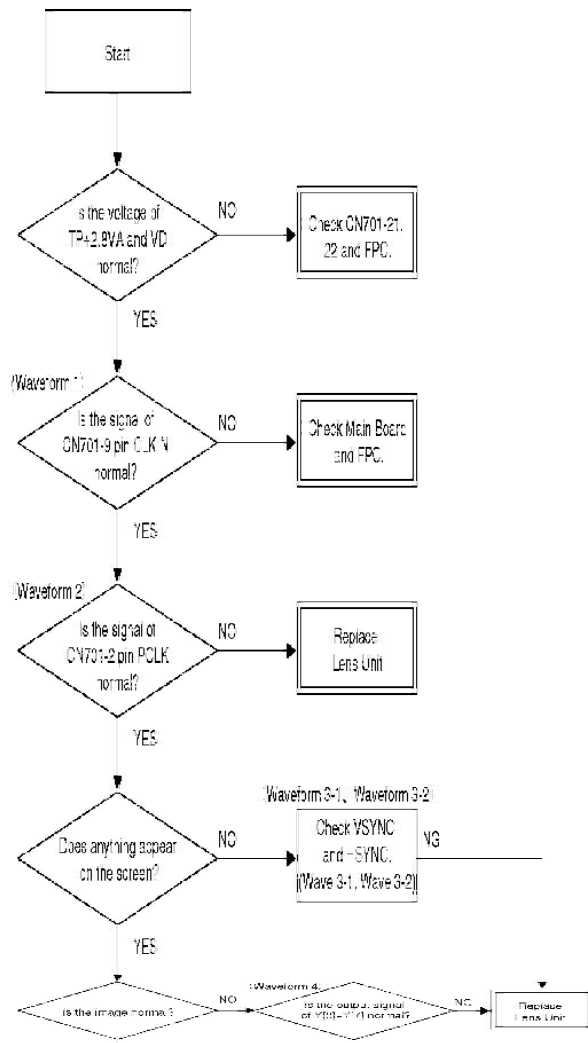
15.3.2. Orange Light Blinking (1)



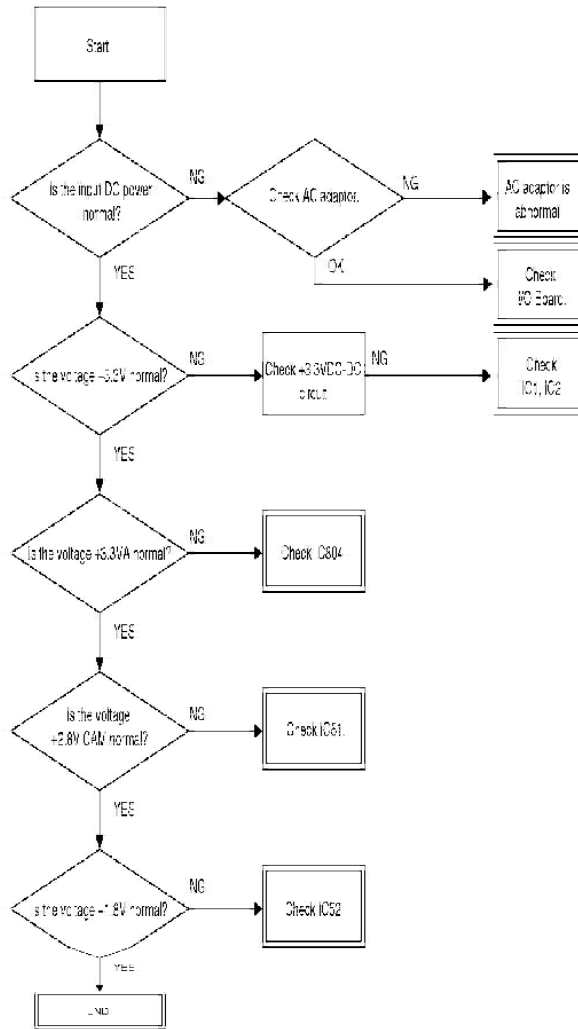
15.3.3. Orange Light Blinking (2)



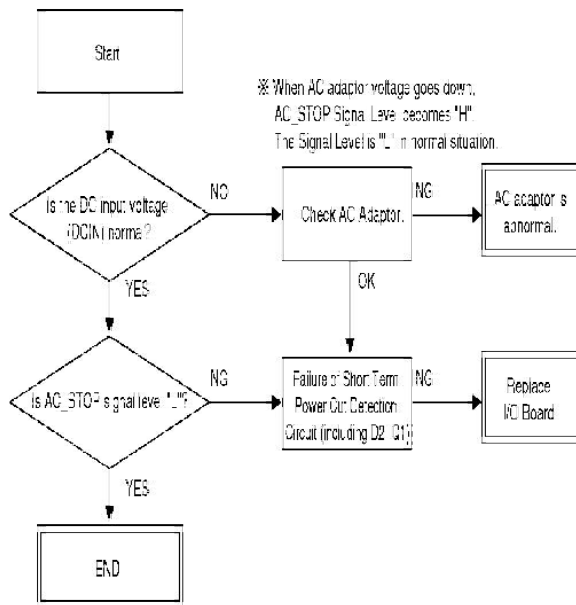
15.4. CAMERA BLOCK CHECK



15.5. POWER SUPPLY BLOCK CHECK

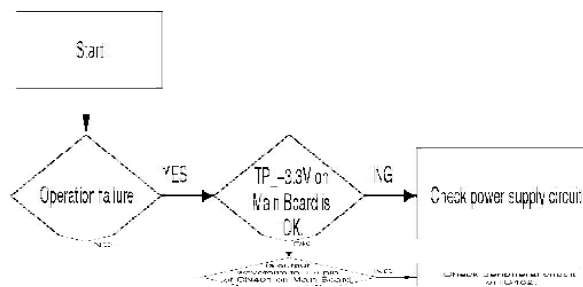


15.5.1. Short Term Power Cut Detection Circuit Check

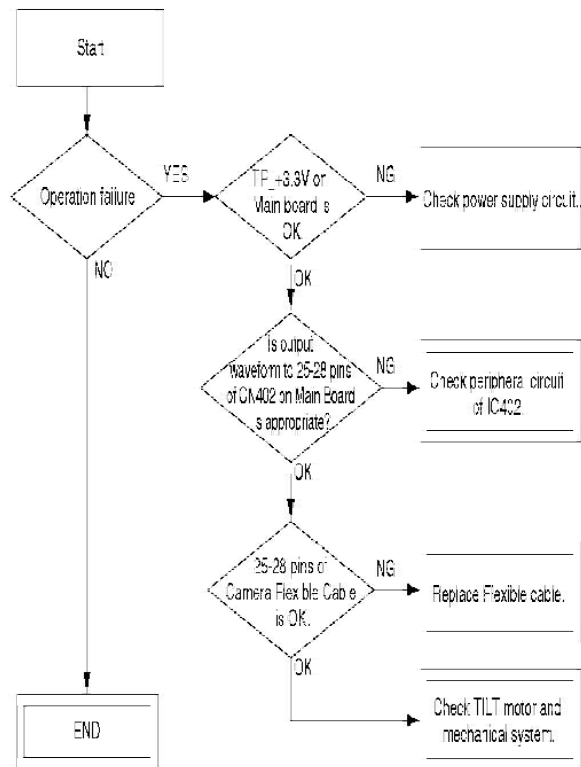


15.6. OTHER OPERATION CHECK

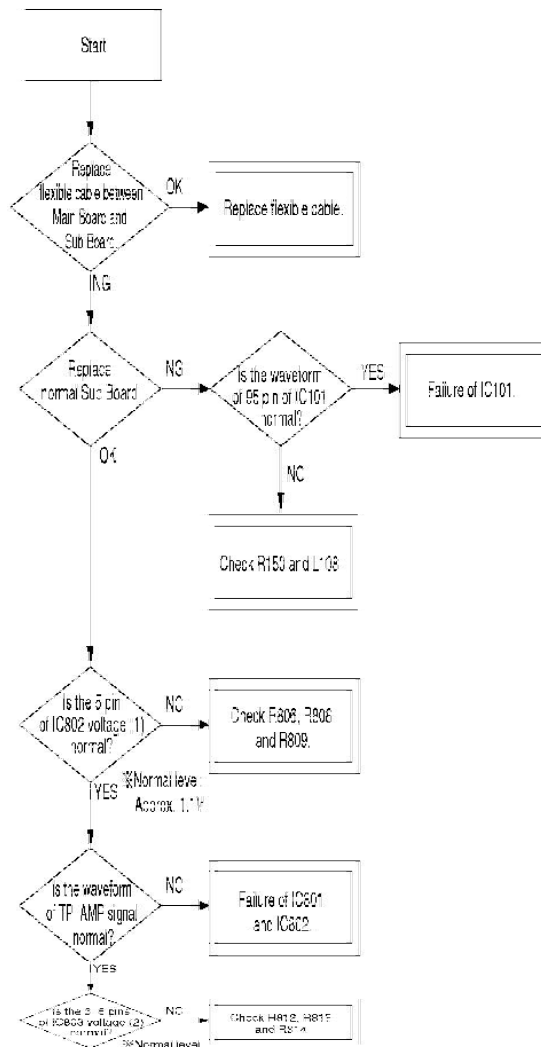
15.6.1. PAN Operation Check



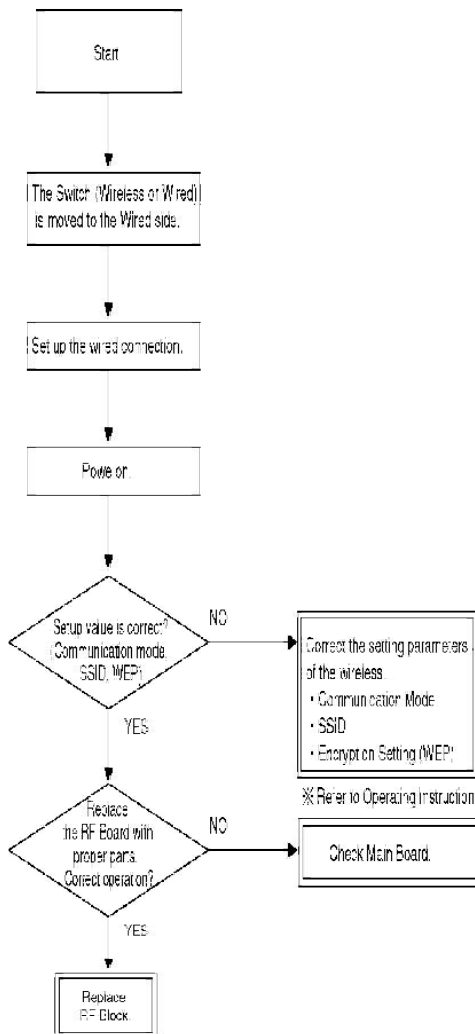
15.6.2. TILT Operation Check



15.7. PYROELECTRIC INFRARED SENSOR CHECK



15.8. RF BLOCK



15.9. THE INSPECTION AFTER THE REPAIR

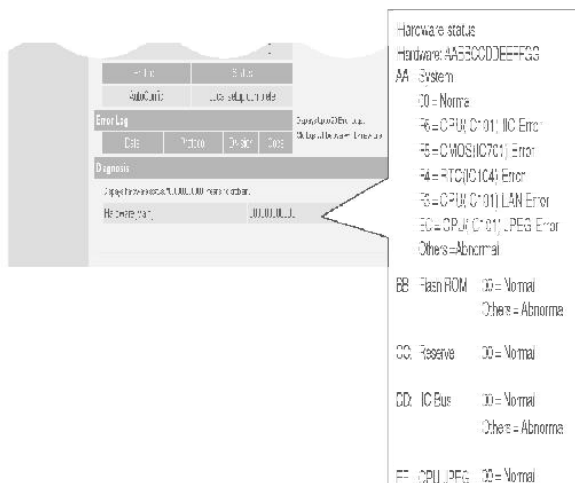
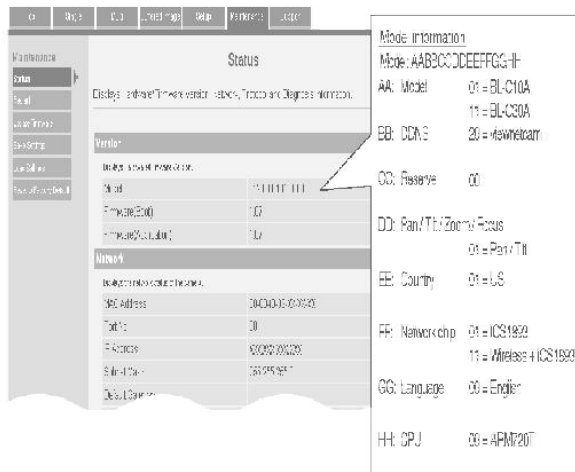
Inspect the following items after the repair.

- Confirm the status (specially MAC Address) refer to **CONFIRMING THE STATUS**.
- PAN/TILT operation
- Pyroelectric Infrared Sensor
- Video quality

15.10. CONFIRMING THE STATUS

When turning on the power, CPU makes a check using the self-diagnosis function. Check being able to the access to the device described below.

When the self-diagnosis function of the device described below is NG turning on the power, CPU makes a check using the LED indicator red-blinks.

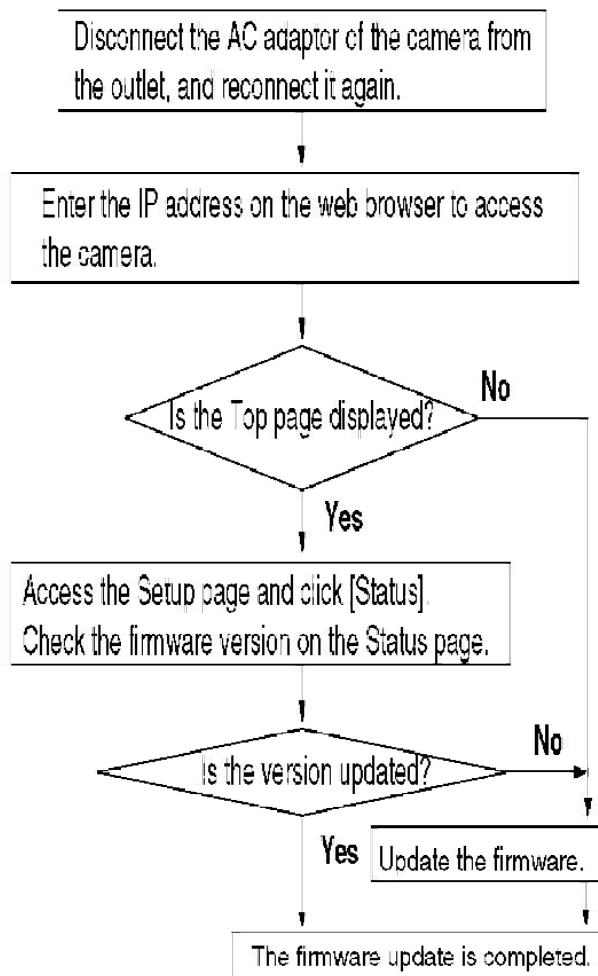


15.11. UPDATE FIRMWARE

15.11.1. Firmware Trouble Shouting

The firmware updating is not completed due to power off, network failure or other causes.

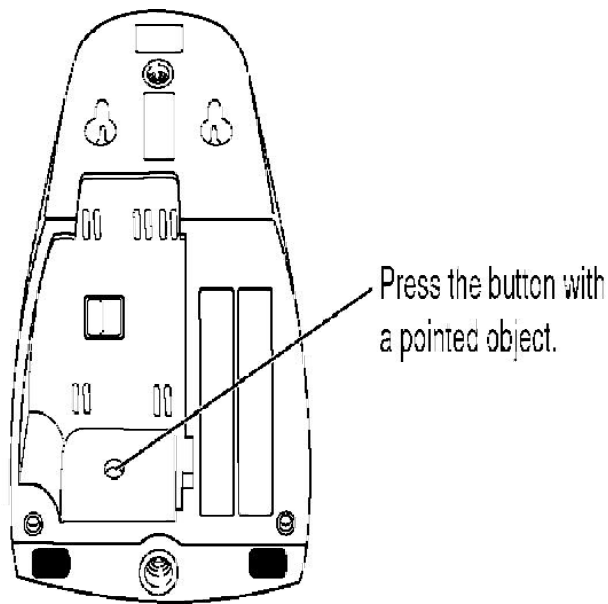
Update the firmware again following the next procedures.



16. THE WAY OF THE INITIALIZE

16.1. FACTORY DEFAULT RESET BUTTON

The camera has a FACTORY DEFAULT RESET button on the bottom.



Pressing the **FACTORY DEFAULT RESET** button resets the camera to factory default.
If you lose your user name and password, use this button to reset the camera.

- **Press the FACTORY DEFAULT RESET button for 1 second when the camera is on.**
- **See Operating Instructions for default settings.**
- **The indicator blinks orange, and then turns off for 10 seconds.**
- **Do not turn off the camera until the indicator lights green.**

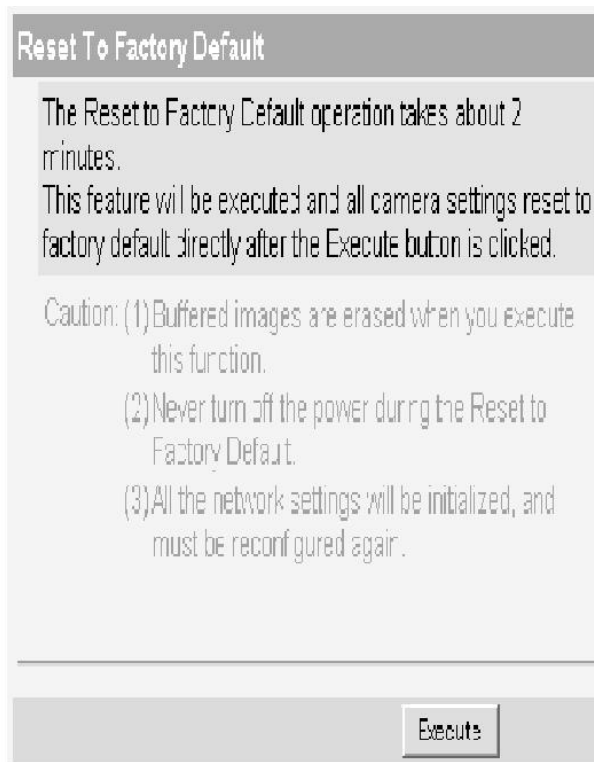
Note:

- **The Internal clock will not be reset, but the time format will return to AM/PM mode. Set it again.**
- **All buffered images are deleted when resetting the camera to factory default.**
- **The reset operation takes about 1 minute.**

16.2. RESETTING THE CAMERA TO FACTORY DEFAULT

All camera settings are reset to factory default directly after the **Execute** button is clicked.

1. Click **[Reset to Factory Default]** on the **Maintenance** page.
2. Click **[Execute]**.



- The indicator blinks orange, and turn off for 10 seconds.
- All camera settings (user name, password, IP address, subnet mask etc.) are reset to factory default.
- If the camera is reset to factory default, the network connection mode changes to [Automatic Setup]. Reconfigure the camera seeing the Getting Started.

Note:

- Internal clock will not be reset, but the time format will return to AM/PM mode. Set it again.
- Please refer to Operating Instructions for default settings.
- Pressing FACTORY DEFAULT RESET button resets the camera to the factory default.
- All buffered images are deleted when resetting the camera to factory default.
- The reset operation takes about 1 minute.
- Do not turn off the camera during the reset operation.

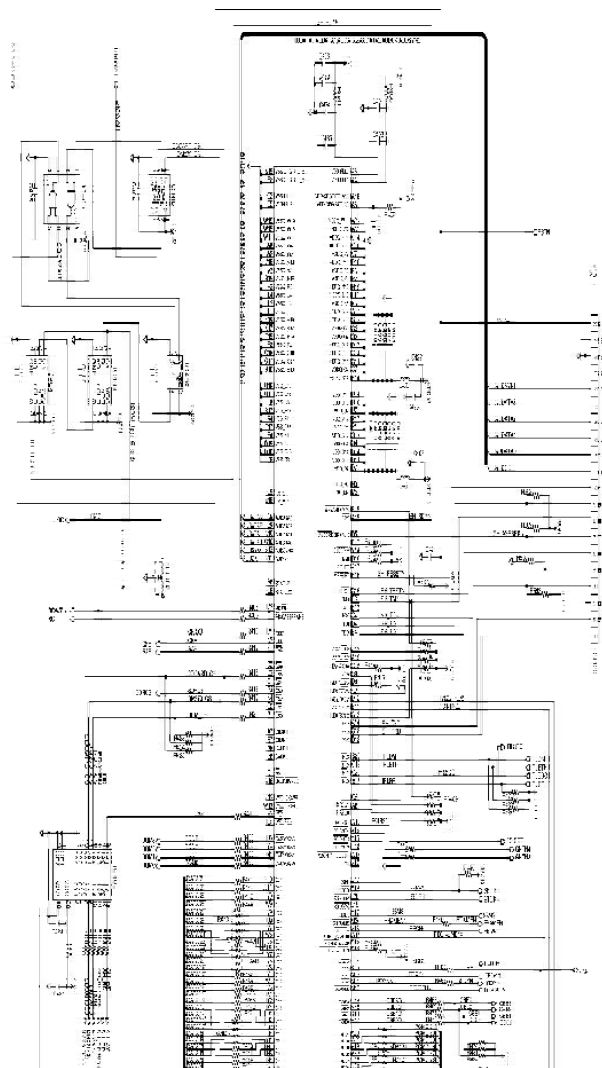
17. BLOCK DIAGRAM (BL-WV10A)

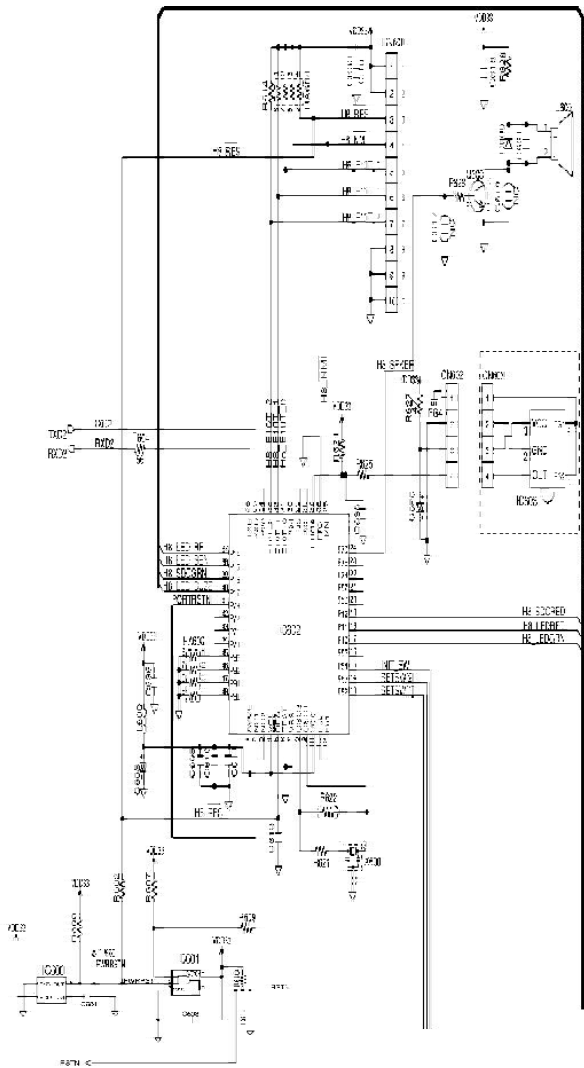
18. BLOCK DIAGRAM (BL-C30A)

19. CIRCUIT DESCRIPTION (BL-WV10A)

19.1. CPU BLOCK

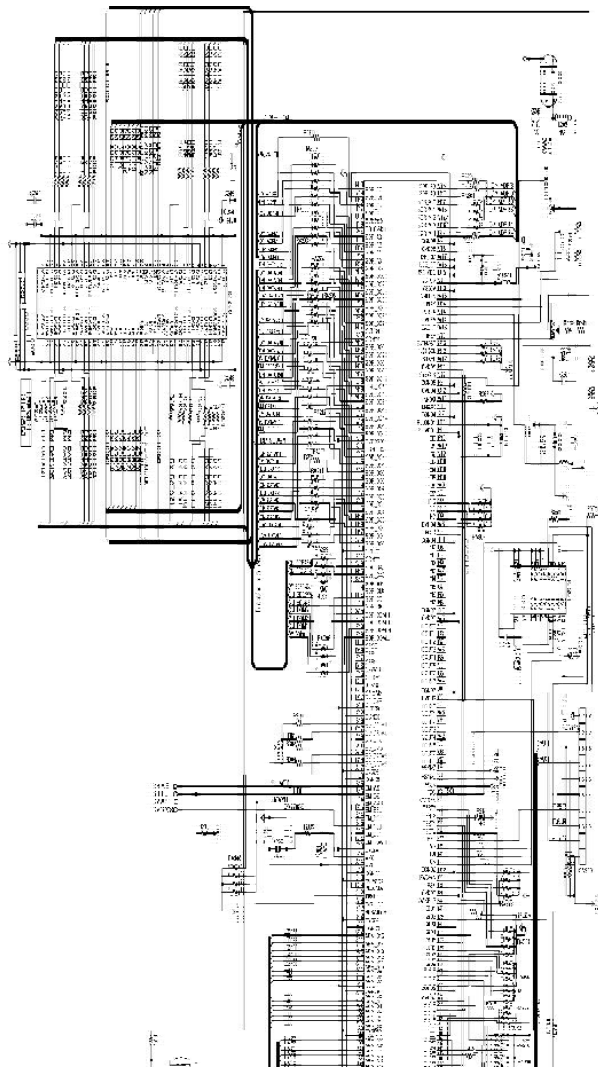
The main CPU (IC408) has functions such as network control, memory control and PCI control. The programs are stored in the writable Flash ROM (IC4), and SDRAM (IC1, IC2) are used for data processing. The sub CPU (IC602), which connects to the main CPU (IC408) by serial line, has functions of timer control, and performs such as receiving control, LED control, buzzer control and WDT control.





19.2. DSP BLOCK

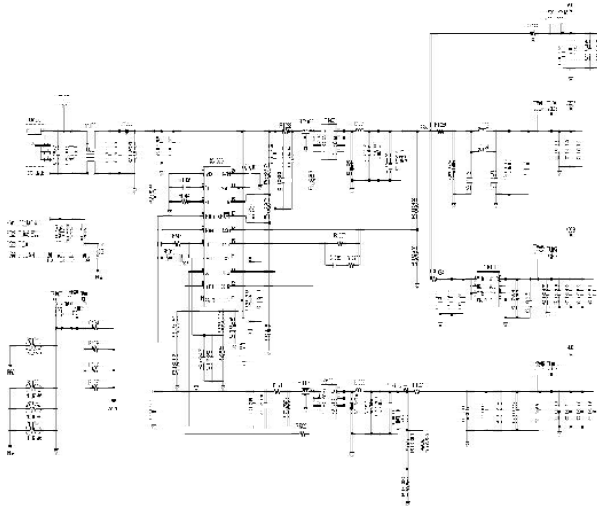
DSP (IC203), which connects to the main CPU (IC408) through a bus, has functions of image data encoding/decoding and video output. SDRAM (IC200) is used as a video memory. The DSP produces the output of the encoded NTSC signal to the RCA connector (CN201) through the amplifier (IC202).



19.3. SD CARD BLOCK

The SD card controller (IC606) is connected to the main CPU (IC408) through a bus, is able to implement the physical layer specifications of the card, and performs read/write control for the SD card. For using the SD card, it should be inserted into the card slot (CN601).

The output voltage DC12V of the AC adaptor is supplied to the TV adaptor through the DC jack (CN1000), and converted to about 3.3V and 1.5V by DC/DC converter (IC1000). And then 3.3V is converted to about 2.5V by the regulator (IC1001).



19.6. RF BLOCK

- Antenna

It resonates the antenna at 2.45GHz, and operates at $\lambda/4$.

The CPU&MAC/BBIC (IC859) performs switches between the print antenna on the main board and retractable antenna as well as send/receive switches by controlling the diversity switch (IC851).

- Receive block

Receive signals from the antenna pass through the diversity switch (IC851), are amplified by the LNA (Low Noise Amp)(Q851), and input to the RFIC (IC857).

The RFIC (IC857) integrates a LNA (Low Noise Amp, LNA in the IC857), a mixer for frequency converter, and a synthesizer generating receive local signals.

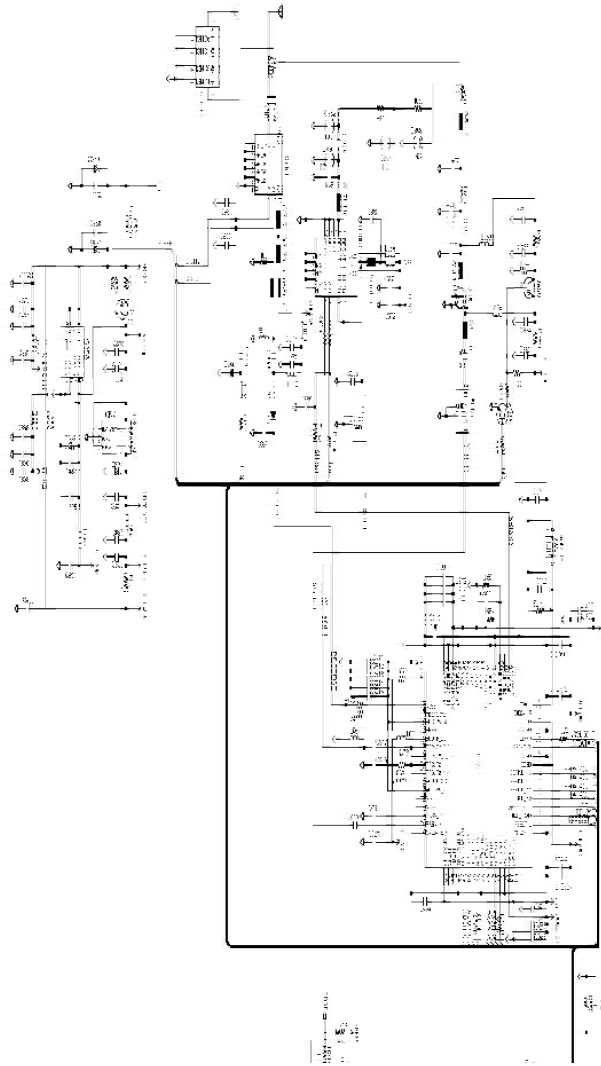
In the RFIC (IC857), input signals are separated into the base band signals of In-Phase (RxI) and Quadrature (RxQ) and then output.

The base band signal is input to the CPU&MAC/BBIC (IC859) and A/D converted, and then the data replay is performed.

- Send block

The data frame (data packet), which is generated in the MAC block integrated in the CPU&MAC/BBIC (IC859), is converted to the In-Phase (TxI) signal and Quadrature (TxQ) signal and input to the RFIC (IC857). In the RFIC (IC857), it is converted to the RF signal at the send frequency band.

After that, it is sent from the antenna via the diversity switch (IC851) through several kinds of processing such as an impedance conversion, a level adjustment, a cut in unnecessary frequency components. The RF signal amplified in the current amplification IC (IC852) is feedbacked through level detection. Gain is adjusted within the RFIC (IC857) so that transmit output level is kept constant.



20. CIRCUIT DESCRIPTION (BL-C30A)

20.1. MAIN BOARD

20.1.1. CPU Block

CPU (IC101)

Operating Power Supply: 3.3V (for I/O) 1.8V (for Core) 1.8V (for Inside PLL) 2.8V (Camera I/O)

Package: 144 pin QFD

Internal Component: 32bit RISC ARM720T, Hardware JPEG Encoder, Memory Controller, 10/100Base Ethernet MAC, I2C I/F, Serial I/F, SRAM (48KB) and etc are built-in.

Outline of Operation: All system Control and image data from the camera is changed to JPEG data.

Then, it is changed to packet and sent out from Ethernet I/F.

32.786 KHz is entered as External Clock and increase at Internal PLL. Then, it operates at 48.955 MHz.

Flash Memory (IC102) and SDRAM (IC103) are accessed by CPU Bus.

CMOS sensor (IC701) and Real Time Clock IC (IC104) on the Camera Block are accessed by I2C I/F.

Ethernet PHY (IC201) is accessed by MII (Media Independent Interface) I/F.

FLASH MEMORY (IC102)

Operating Power Supply: +3.3V

Package: 48 pin Ball CSP

Capacity: 16Mbit

Access Time: 70ns

Outline of Operation: Stores programs for CPU operation, MAC address and customer setup data.

Version up is available from Ethernet I/F.

SDRAM (IC103)

Operating Power Supply: +3.3V

Package: 54 pin TSOP

Capacity: 64Mbit

Outline of Operation: Stores the memory for CPU work and temporary saved images.

RESET IC (IC105)

Reset voltage: 2.9V

Package: 4 pin SOP

Outline of Operation: When 3.3V power starts up, it emits about 150ms reset pulse after detecting 2.9V.

Clear Setting Button (SW802)

Outline of Operation: It is possible to bring back the setting value of a Network Camera to a factory-shipments state, when you push.

GPI0

- **Motor (PAN/TILT) Operation**

- **Clear Setting SW**

- **Privacy Mode SW**

- **I2C**

- **LED**

- **Pyroelectric Infrared Sensor**

- **Short Term Power Cut Detection**

Port No.	IC101 PIN No.	Usage	Description
GPIOA0	79	TXD0	Serial(Not in use.)
GPIOA1	80	RXD0	Serial(Not in use.)
GPIOA2	81	PAN Motor 1	PAN Motor Control
GPIOA3	82	PAN Motor 2	PAN Motor Control
GPIOA4	83	PAN Motor 3	PAN Motor Control
GPIOA5	84	PAN Motor 4	PAN Motor Control
GPIOA6	85	I2C(SCL)	I2C I/F(Clock)
GPIOA7	86	I2C(SDA)	I2C I/F(Data)
GPIOB0	89	RF_P1	For RF Port Input(Application is not decided)
GPIOB1	90	RTS	Serial(Not in use.)
GPIOB2	91	CTS	Serial(Not in use.)
GPIOB3	92	CLEAR SETTING Switch	SW104
GPIOB4	94	Short Term Power Cut Detection	Interruption
GPIOB5	95	Pyroelectric Infrared Sensor	
GPIOB6	96	RF_P3	For RF Port Output(Application is not decided)
GPIOB7	97	RF_P2	For RF Port Output(Application is not decided)
GPIOC0	103	Camera I/F(CMDATA0)	Camera Data Signal
GPIOC1	104	Camera I/F(CMDATA1)	Camera Data Signal
GPIOC2	106	Camera I/F(CMDATA2)	Camera Data Signal
GPIOC3	107	Camera I/F(CMDATA3)	Camera Data Signal
GPIOC4	108	Camera I/F(CMDATA4)	Camera Data Signal
GPIOC5	109	Camera I/F(CMDATA5)	Camera Data Signal
GPIOC6	110	Camera I/F(CMDATA6)	Camera Data Signal
GPIOC7	111	Camera I/F(CMDATA7)	Camera Data Signal
GPIOD0	114	Address A[20]	
GPIOD1	115	MODE	For ICE Mode Recognizing Signal(H: ICE L: Normal)
GPIOD2	116	Power Down	For IC201(PHY), IC701(CMOS Sensor)
GPIOD3	117	nCMOS_RES	For IC701(CMOS Sensor)
GPIOD4	100	Camera I/F(CMVREF)	Camera Vertical Synchronous Signal
GPIOD5	99	Camera I/F(CMHREF)	Camera Horizontal Synchronous Signal
GPIOD6	102	Camera I/F(CMCLKOUT)	For Camera Basic Clock Output Signal
GPIOD7	101	Camera I/F(CMCLKIN)	For Camera Data Input Pixel Clock

GPIOE0	118	LED_R	LED Control(Red)
GPIOE1	119	LED_G	LED Control(Green)
Port No.	IC101 PIN No.	Usage	Description
GPIOE2	124	TILT Motor 1	TILT Motor Control
GPIOE3	121	TILT Motor 2	TILT Motor Control
GPIOE4	120	TILT Motor 3	TILT Motor Control
GPIOE5	125	TILT Motor 3	TILT Motor Control
GPIOE6	126	LENS Button	SW801
GPIOE7	127	Reset	For IC201(PHY)
GPIOF0	45	MII I/F (MII_CRS)	For IC201(PHY) Connection
GPIOF1	46	MII I/F (MII_COL)	For IC201(PHY) Connection
GPIOF2	47	MII I/F (MII_TXD3)	For IC201(PHY) Connection
GPIOF3	48	MII I/F (MII_TXD2)	For IC201(PHY) Connection
GPIOF4	49	MII I/F (MII_TXD1)	For IC201(PHY) Connection
GPIOF5	50	MII I/F (MII_TXD0)	For IC201(PHY) Connection
GPIOF6	52	MII I/F (MII_TXEN)	For IC201(PHY) Connection
GPIOF7	53	MII I/F (MII_TXCLK)	For IC201(PHY) Connection
GPIOG0	54	MII I/F (MII_RXER)	
GPIOG1	57	MII I/F (MII_RXCLK)	For IC201(PHY) Connection
GPIOG2	58	MII I/F (MII_RXDV)	For IC201(PHY) Connection
GPIOG3	59	MII I/F (MII_RXD0)	For IC201(PHY) Connection
GPIOG4	60	MII I/F (MII_RXD1)	For IC201(PHY) Connection
GPIOG5	62	MII I/F (MII_RXD2)	For IC201(PHY) Connection
GPIOG6	63	MII I/F (MII_RXD3)	For IC201(PHY) Connection
GPIOG7	64	MII I/F (MII_MDC)	For IC201(PHY) Connection
GPIOH0	65	MII I/F (MII_MDIO)	For IC201(PHY) Connection

20.1.2. LAN Block

Consists of IC101 (CPU), IC201 (ETHER-PHY), T1 (Trans) and CN2 (RJ45).

T1 (Trans) insulates sets and Ethernet.

IC101 (CPU) and IC201 (ETHER-PHY) are connected by a signal called MII Bus which it makes it possible to transmit/receive Ethernet data.

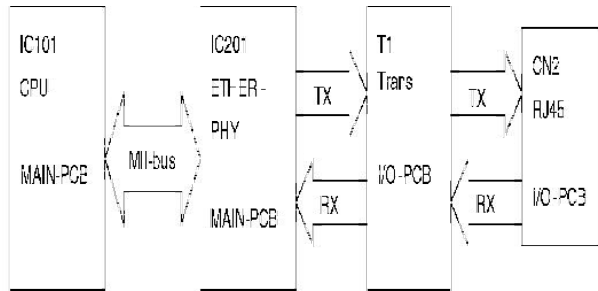
IC201 has Auto Negotiation Function which changes 100BASE-T or 10BASE-TX automatically.

Transmitting Operation

Electric signal from IC101 is changed to Ethernet data on IC201 and it is sent through T1 from CN2.

Receiving Operation

Ethernet data from CN2 is change to electrical signal on IC201 and it is received by IC101.



20.1.3. Camera Block

<Basic Circuit Operation>

This CMOS image sensor which consolidates sensor section and image process DSP by the 0.35umCMOS process consists of one chip. Each pixel which consists of four transistors has a micro lens for increased sensibility. It changes optical energy to analogue voltage. After that, analogue pixel voltage is converted into digital using the 10 bit AD Converter (ADC). At that time, Correlated Double Sampling (CDS) dramatically decreases Formulaic Pattern Noise (FPN).

Analogue pixel voltage data which is converted to digital is finished using Gammacorrection, Color Correction and Color Space Conversion. Those signals are sent out as digital format 8bit span Y/UV with PCLK, Hsync and Vsync signals as a timing interface. In addition, the Image Processing Function of AE (Auto Iris) and AWB (Auto White Balance) is installed and it is automatically operated following an algorithm in the chip.

Exposure control (Auto Iris) is adjusted by shutter speed.

Setting up of each chip register is set at I2C (IC701:22/23 pin) by CPU (IC101) on Main Board.

CMOS Color Image sensor (IC701)

Operating Power Supply: +2.8V It is supplied by Main Board. (3 Terminal Regulator IC51)

- **+2.8VA: Analogue Part Power**

- **+2.8VD: Digital Part Power**

Package: 40pin CLCC

Image Sensor and its Process Circuit are installed.

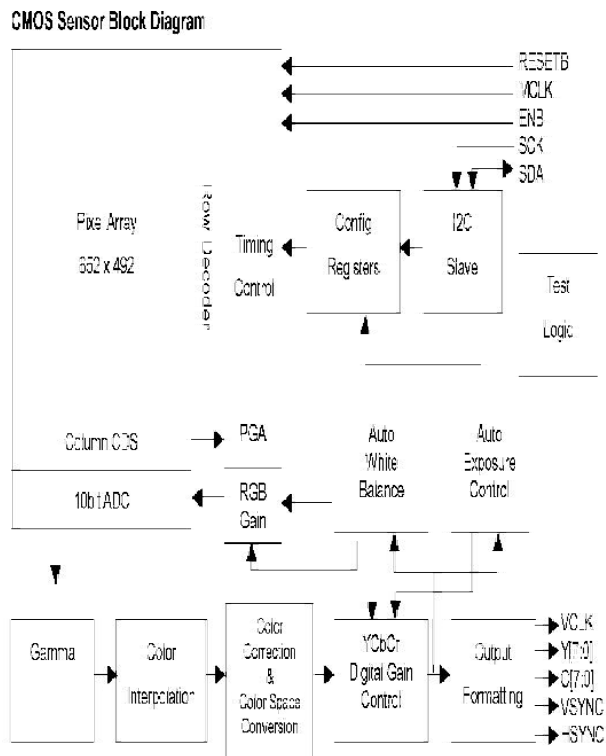
Total Number of Pixels: 652 x 492 pixels

Available Number of Pixels: 652 x 488 pixels

Image Area: 1/4 inch Optical Size

Color Filter: RGB Beyer Alignment

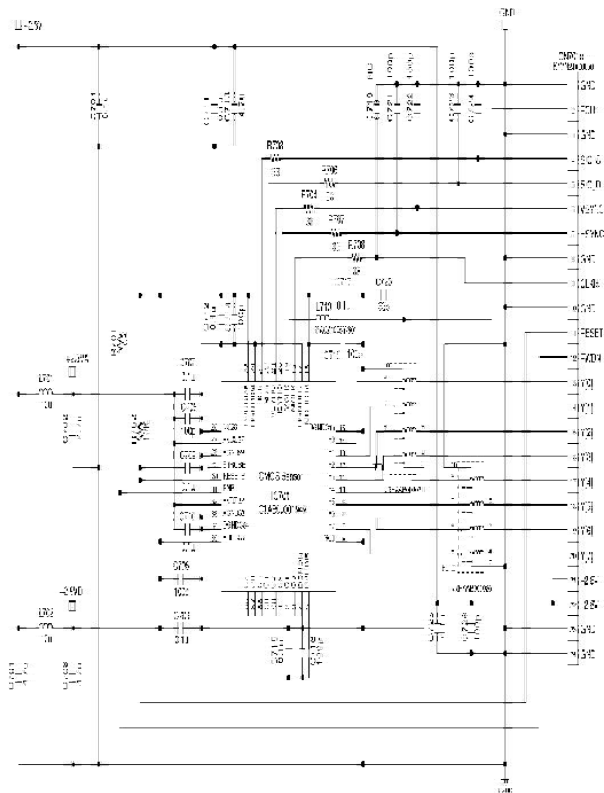
Input Clock: 16.318 MHz (It is supplied by IC101 of Main Board)



1. PGA: Programmable Amplifier

2. Color Correction and Color Space Conversion are merged into one matrix operation for hardware simplification.

Detail Circuit Diagram is showed as below.



20.1.4. Power Supply Block

Power Supply Block provides power that each block consumes.

Input is DC 12V/750mA from AC adaptor. The circuit diagram and output voltage are showed as below.



Package: 3 pin Board Insertion Type

Changes temperature variation into analogue signal which it emits, when a heat source, such as a person, comes into detection area.

The analogue signal is amplified by Operational Amplifier (IC802).

2 Circuits Built-in Operational Amplifier (IC802)

Operating Power Supply: +3.3V

Package: 8 pin SSOP

Amplifies analogue signal from Pyroelectric Infrared Sensor (IC801).

The amplified analogue signal goes into Comparator (IC803).

2 Circuits Built-in Comparator (IC803)

Operating Power Supply: +3.3V

Package: 8 pin SSOP

Composes Window Comparator Circuit. It generates digital signal (H – L) to CPU, when the amplified analogue signal from Operation Amplifier is over stipulated voltage. (Standard value is about 0.6~1.6V.)

Operation of Pyroelectric Infrared Sensor

- 1. Pyroelectric Infrared Sensor (IC801) emits analogue signal, when a heat source, such as a person, moves into the detection area.**
- 2. Above signal is amplified by Operation Amplifier (IC802) which emits analogue signal.**
- 3. Above signal is input to Comparator (IC803) and generates digital signal (H – L), when signal amplitude is over standard voltage.**
- 4. Above digital signal is input to CPU (IC101).**

20.1.7. PAN Control Block

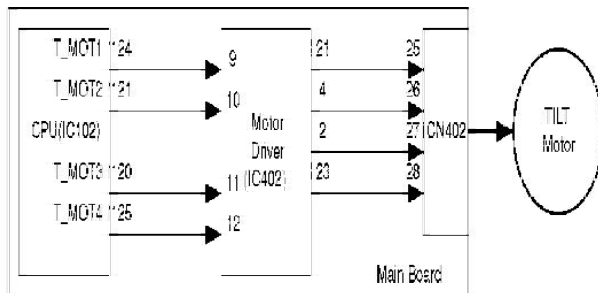
A pan motor operates, when CPU (IC101) on a Main Board controls the Motor Driver IC (IC402) on the same board.

A Constant Voltage Bipolar Drive System is employed. The Voltage of Motor Power (VM) is 3.3V. ø15 Stepping Motors are employed.

20.1.8. TILT Motor Control Block

A Tilt motor operates, when CPU (IC101) on a main board controls the motor driver IC (IC402) on the same board.

A Constant Voltage Bipolar Drive System is employed. The Voltage of Motor Power (VM) is 3.3V. ø15 Stepping Motors are employed.



20.1.9. LED Control Block

LED is controlled by CPU which is mounted on Main Board. Control data is input into LED Control Circuit which is mounted on Sub Board. (Three color LED is employed.)

LED_R	LED_G	Color of LED
L	L	OFF
L	H	Green
H	L	Red
H	H	Orange

20.2. RF BLOCK

- Antenna

- Receiver

The receiving signal from the antenna is input to the RFIC (IC502) after being passed through the Antenna Switch (IC506) and amplified at LNA (Low Noise Amp). The RFIC (IC502) incorporates the LNA (Low Noise Amp), the Mixer for Frequency Converter and the Synthesizer generating the Receiving Local Signal. At the RFIC (IC502), the input signal is separated into the baseband signals of the In-Phase (RxI) and Quadrature (RxQ) to output.

The baseband signal is input to the CPU&MAC/BBIC(IC601) and, after A/D conversion, the data are regenerated.

- Transmitter

The Data Frame (Data Packet) generated at the built-in MAC Part by the CPU&MAC/BBIC (IC601) is converted to the In-Phase (TxI) and the Quadrature (TxQ) and input to the RFIC (IC502).

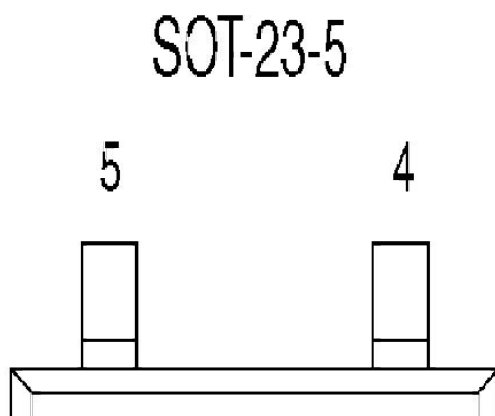
At the RFIC (IC502), it is converted to the RF Signal of the transmitting frequency band.

After processing including impedance conversion, level adjustment and control of the unnecessary frequency component, it is sent from the antenna through the Antenna Switch (IC506).

The RF Signal from the Power Amp (IC505) is fed back to the RFIC (IC502) after level detection. The gain is adjusted in the RFIC (IC502) for a constant transmitter output level.

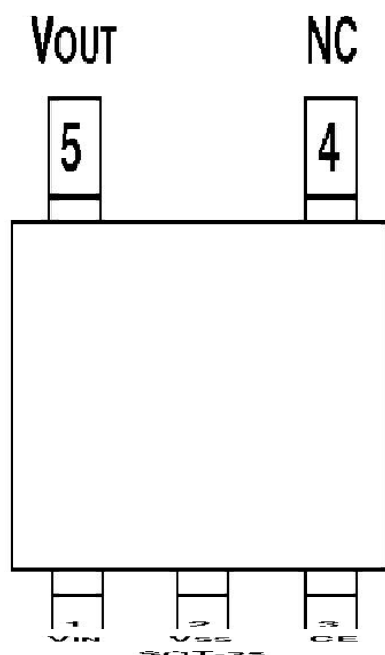
21. IC DATA (BL-C30A)

21.1. IC2



Pin No.	Pin Name	Description
1	CE	Chip enable terminal ("H" ACTIVE)
2	GND	GND terminal
3	VOUT (FFB)	Output voltage monitoring terminal
4	EXT	External Tr drive terminal (CMOS output)
6	VIN	Power input terminal

21.2. IC51, 52



Pin No.	Pin Name	Description
1	VIN	Power input terminal
2	VSS	Ground terminal
3	CE	ON/OFF control terminal
4	NC	No connection
5	VOUT	Output terminal

21.3. IC101

1	MA14	MA14	144
2	MA15	MA15	145
3	MA16	MA16	146
4	MA17	MA17	147
5	MA18	MA18	148
6	VSS8	MA19	149
7	MA19	MA20	150
8	MA20	MA21	151
9	MA21	MA22	152
10	MA22	MA23	153
11	LVDD11	MA24	154
12	MA23	MA25	155
13	MA24	MA26	156
14	MA25	MA27	157
15	MA26	MA28	158
16	MA27	MA29	159
17	MA28	MA30	160
18	MA29	MA31	161
19	MA30	MA32	162
20	MA31	MA33	163
21	MA32	MA34	164
22	MA33	MA35	165
23	MA34	MA36	166
24	MA35	MA37	167
25	MA36	MA38	168
26	MA37	MA39	169
27	MA38	MA40	170
28	MA39	MA41	171
29	MA40	MA42	172
30	MA41	MA43	173
31	MA42	MA44	174
32	MA43	MA45	175
33	MA44	MA46	176
34	MA45	MA47	177
35	MA46	MA48	178
36	MA47	MA49	179
37	MA48	MA50	180
38	MA49	MA51	181
39	MA50	MA52	182
40	MA51	MA53	183
41	MA52	MA54	184
42	MA53	MA55	185
43	MA54	MA56	186
44	MA55	MA57	187
45	MA56	MA58	188
46	MA57	MA59	189
47	MA58	MA60	190
48	MA59	MA61	191
49	MA60	MA62	192
50	MA61	MA63	193
51	MA62	MA64	194
52	MA63	MA65	195
53	MA64	MA66	196
54	MA65	MA67	197
55	MA66	MA68	198
56	MA67	MA69	199
57	MA68	MA70	200
58	MA69	MA71	201
59	MA70	MA72	202
60	MA71	MA73	203
61	MA72	MA74	204
62	MA73	MA75	205
63	MA74	MA76	206
64	MA75	MA77	207
65	MA76	MA78	208
66	MA77	MA79	209
67	MA78	MA80	210
68	MA79	MA81	211
69	MA80	MA82	212
70	MA81	MA83	213
71	MA82	MA84	214
72	MA83	MA85	215
73	MA84	MA86	216
74	MA85	MA87	217
75	MA86	MA88	218
76	MA87	MA89	219
77	MA88	MA90	220
78	MA89	MA91	221
79	MA90	MA92	222
80	MA91	MA93	223
81	MA92	MA94	224
82	MA93	MA95	225
83	MA94	MA96	226
84	MA95	MA97	227
85	MA96	MA98	228
86	MA97	MA99	229
87	MA98	MA100	230
88	MA99	MA101	231
89	MA100	MA102	232
90	MA101	MA103	233
91	MA102	MA104	234
92	MA103	MA105	235
93	MA104	MA106	236
94	MA105	MA107	237
95	MA106	MA108	238
96	MA107	MA109	239
97	MA108	MA110	240
98	MA109	MA111	241
99	MA110	MA112	242
100	MA111	MA113	243
101	MA112	MA114	244
102	MA113	MA115	245
103	MA114	MA116	246
104	MA115	MA117	247
105	MA116	MA118	248
106	MA117	MA119	249
107	MA118	MA120	250
108	MA119	MA121	251
109	MA120	MA122	252
110	MA121	MA123	253
111	MA122	MA124	254
112	MA123	MA125	255
113	MA124	MA126	256
114	MA125	MA127	257
115	MA126	MA128	258
116	MA127	MA129	259
117	MA128	MA130	260
118	MA129	MA131	261
119	MA130	MA132	262
120	MA131	MA133	263
121	MA132	MA134	264
122	MA133	MA135	265
123	MA134	MA136	266
124	MA135	MA137	267
125	MA136	MA138	268
126	MA137	MA139	269
127	MA138	MA140	270
128	MA139	MA141	271
129	MA140	MA142	272
130	MA141	MA143	273
131	MA142	MA144	274
132	MA143	MA145	275
133	MA144	MA146	276
134	MA145	MA147	277
135	MA146	MA148	278
136	MA147	MA149	279
137	MA148	MA150	280
138	MA149	MA151	281
139	MA150	MA152	282
140	MA151	MA153	283
141	MA152	MA154	284
142	MA153	MA155	285
143	MA154	MA156	286
144	MA155	MA157	287
145	MA156	MA158	288
146	MA157	MA159	289
147	MA158	MA160	290
148	MA159	MA161	291
149	MA160	MA162	292
150	MA161	MA163	293
151	MA162	MA164	294
152	MA163	MA165	295
153	MA164	MA166	296
154	MA165	MA167	297
155	MA166	MA168	298
156	MA167	MA169	299
157	MA168	MA170	300
158	MA169	MA171	301
159	MA170	MA172	302
160	MA171	MA173	303
161	MA172	MA174	304
162	MA173	MA175	305
163	MA174	MA176	306
164	MA175	MA177	307
165	MA176	MA178	308
166	MA177	MA179	309
167	MA178	MA180	310
168	MA179	MA181	311
169	MA180	MA182	312
170	MA181	MA183	313
171	MA182	MA184	314
172	MA183	MA185	315
173	MA184	MA186	316
174	MA185	MA187	317
175	MA186	MA188	318
176	MA187	MA189	319
177	MA188	MA190	320
178	MA189	MA191	321
179	MA190	MA192	322
180	MA191	MA193	323
181	MA192	MA194	324
182	MA193	MA195	325
183	MA194	MA196	326
184	MA195	MA197	327
185	MA196	MA198	328
186	MA197	MA199	329
187	MA198	MA200	330
188	MA199	MA201	331
189	MA200	MA202	332
190	MA201	MA203	333
191	MA202	MA204	334
192	MA203	MA205	335
193	MA204	MA206	336
194	MA205	MA207	337
195	MA206	MA208	338
196	MA207	MA209	339
197	MA208	MA210	340
198	MA209	MA211	341
199	MA210	MA212	342
200	MA211	MA213	343
201	MA212	MA214	344
202	MA213	MA215	345
203	MA214	MA216	346
204	MA215	MA217	347
205	MA216	MA218	348
206	MA217	MA219	349
207	MA218	MA220	350
208	MA219	MA221	351
209	MA220	MA222	352
210	MA221	MA223	353
211	MA222	MA224	354
212	MA223	MA225	355
213	MA224	MA226	356
214	MA225	MA227	357
215	MA226	MA228	358
216	MA227	MA229	359
217	MA228	MA230	360
218	MA229	MA231	361
219	MA230	MA232	362
220	MA231	MA233	363
221	MA232	MA234	364
222	MA233	MA235	365
223	MA234	MA236	366
224	MA235	MA237	367
225	MA236	MA238	368
226	MA237	MA239	369
227	MA238	MA240	370
228	MA239	MA241	371
229	MA240	MA242	372
230	MA241	MA243	373
231	MA242	MA244	374
232	MA243	MA245	375
233	MA244	MA246	376
234	MA245	MA247	377
235	MA246	MA248	378
236	MA247	MA249	379
237	MA248	MA250	380
238	MA249	MA251	381
239	MA250	MA252	382
240	MA251	MA253	383
241	MA252	MA254	384
242	MA253	MA255	385
243	MA254	MA256	386
244	MA255	MA257	387
245	MA256	MA258	388
246	MA257	MA259	389
247	MA258	MA260	390
248	MA259	MA261	391
249	MA260	MA262	392
250	MA261	MA263	393
251	MA262	MA264	394
252	MA263	MA265	395
253	MA264	MA266	396
254	MA265	MA267	397
255	MA266	MA268	398
256	MA267	MA269	399
257	MA268	MA270	400
258	MA269	MA271	401
259	MA270	MA272	402
260	MA271	MA273	403
261	MA272	MA274	404
262	MA273	MA275	405
263	MA274	MA276	406
264	MA275	MA277	407
265	MA276	MA278	408
266	MA277	MA279	409
267	MA278	MA280	410
268	MA279	MA281	411
269	MA280	MA282	412
270	MA281	MA283	413
271	MA282	MA284	414
272	MA283	MA285	415
273	MA284	MA286	416
274	MA285	MA287	417
275	MA286	MA288	418
276	MA287	MA289	419
277	MA288	MA290	420
278	MA289	MA291	421
279	MA290	MA292	422
280	MA291	MA293	423
281	MA292	MA294	424
282	MA293	MA295	425
283	MA294	MA296	426
284	MA295	MA297	427
285	MA296	MA298	428
286	MA297	MA299	429
287	MA298	MA300	430
288	MA299	MA301	431
289	MA300	MA302	432
290	MA301	MA303	433
291	MA302	MA304	434
292	MA303	MA305	435
293	MA304	MA306	436
294	MA305	MA307	437
295	MA306	MA308	438
296	MA307	MA309	439
297	MA308	MA310	440
298	MA309	MA311	441
299	MA310	MA312	442
300	MA311	MA313	443
301	MA312	MA314	444
302	MA313	MA315	445
303	MA314	MA316	446
304	MA315	MA317	447
305	MA316	MA318	448
306	MA317	MA319	449
307	MA318	MA320	450
308	MA319	MA321	451
309	MA320	MA322	452
310	MA321	MA323	453
311	MA322	MA324	454
312	MA323	MA325	455
313	MA324	MA326	456
314	MA325	MA327	457
315	MA326	MA328	458
316	MA327	MA329	459
317	MA328	MA330	460
318	MA329	MA331	461
319	MA330	MA332	462
320	MA331	MA333	463
321	MA332	MA334	464
322	MA333	MA335	465
323	MA334	MA336	466
324	MA335	MA337	467

Pin No.	Pin Name	Type	Pin No.	Pin Name	Type
1	MA14	O	46	MII_COL	I/O
2	MA15	O	47	MII_TXD3	I/O
3	MA16	O	48	MII_TXD2	I/O
4	MA17	O	49	MII_TXD1	I/O
5	MA18	O	50	LVDD	P
6	VSS	P	51	MII_TXD0	I/O
7	MA19	O	52	MII_TXEN	I/O
8	MCS2#	O	53	MII_TXCLK	I/O
9	MCS1#	O	54	MII_RXER	I/O
10	MCS0#	O	55	VSS	P
11	LVDD	P	56	HVDD1	P
12	MOE#	O	57	MII_RXCLK	I/O
13	MWE0#	O	58	MII_RXDV	I/O
14	MWE1#	O	59	MII_RXD0	I/O
15	HVDD1	P	60	MII_RXD1	I/O
16	MCLKEN	O	61	LVDD	P
17	MCLK	O	62	MII_RXD2	I/O
18	VSS	P	63	MII_RXD3	I/O
19	MRAS#	O	64	MII_MDC	I/O
20	MCAS#	O	65	MII_MDIO	I/O
21	MD0	I/O	66	VSS	P
22	MD1	I/O	67	CLKI	I
23	MD2	I/O	68	PLL_VSS	P
24	MD3	I/O	69	VCP	O
25	VSS	P	70	PLL_VDD	P
26	LVDD	P	71	RESET#	I
27	MD4	I/O	72	TESTEN	I
28	MD5	I/O	73	TRST#	I
29	MD6	I/O	74	TCK	I
30	MD7	I/O	75	TMS	I
31	HVDD1	P	76	TDI	I
32	MD8	I/O	77	TDO	O
33	MD9	I/O	78	VSS	P
34	MD10	I/O	79	GPIOA0	I/O
35	MD11	I/O	80	GPIOA1	I/O
36	VSS	P	81	GPIOA2	I/O
37	MD12	I/O	82	GPIOA3	I/O
38	MD13	I/O	83	GPIOA4	I/O
39	MD14	I/O	84	GPIOA5	I/O
40	MD15	I/O	85	GPIOA6	I/O
41	MDQML	O	86	GPIOA7	I/O
42	MDQMH	O	87	HVDD1	P
43	HVDD1	P	88	VSS	P
44	VSS	P	89	GPIOB0	I/O
45	MII_COL	I/O	90	GPIOB1	I/O

45	MII_CRS	I/O	90	GPIOB1	I/O
----	---------	-----	----	--------	-----

Pin No.	Pin Name	Type			
91	GPIOB2	I/O			
92	GPIOB3	I/O			
93	LVDD	P			
94	GPIOB4	I/O			
95	GPIOB5	I/O			
96	GPIOB6	I/O			
97	GPIOB7	I/O			
98	VSS	P			
99	CMHREF	I/O			
100	CMVREF	I/O			
101	CMCLKIN	I/O			
102	CMCLKOUT	I/O			
103	CMDATA0	I/O			
104	CMDATA1	I/O			
105	HVDD2	P			
106	CMDATA2	I/O			
107	CMDATA3	I/O			
108	CMDATA4	I/O			
109	CMDATA5	I/O			
110	CMDATA6	I/O			
111	CMDATA7	I/O			
112	VSS	P			
113	LVDD	P			
114	GPIOD0	I/O			
115	GPIOD1	I/O			
116	CFCE2#	I/O			
117	CFCE1#	I/O			
118	CFIORD#	I/O			
119	CFIOWR#	I/O			
120	CFIREQ	I/O			
121	CFRST	I/O			
122	VSS	P			
123	HVDD1	P			
124	CFWAIT#	I/O			
125	CFSTSCHG#	I/O			
Pin No.	Pin Name	Type	Pin No.	Pin Name	Type
126	CFDEN#	I/O	136	MA6	O
127	CFDDIR	I/O	137	MA7	O
128	MA0	O	138	MA8	O
129	MA1	O	139	HVDD1	P
130	MA2	O	140	MA9	O
131	MA3	O	141	MA10	O
132	VSS	P	142	MA11	O
133	LVDD	P	143	MA12	O
134	MA4	O	144	MA13	O
135	MA5	O			

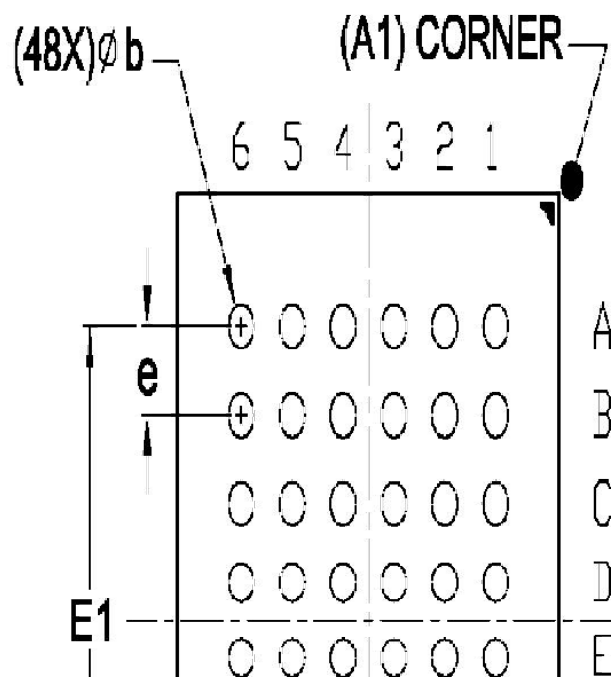
-	-	-	-	-	-
---	---	---	---	---	---

Note:

The terminal name marked with a "#" has an active low signal.

21.4. IC102

BOTTOM VIEW

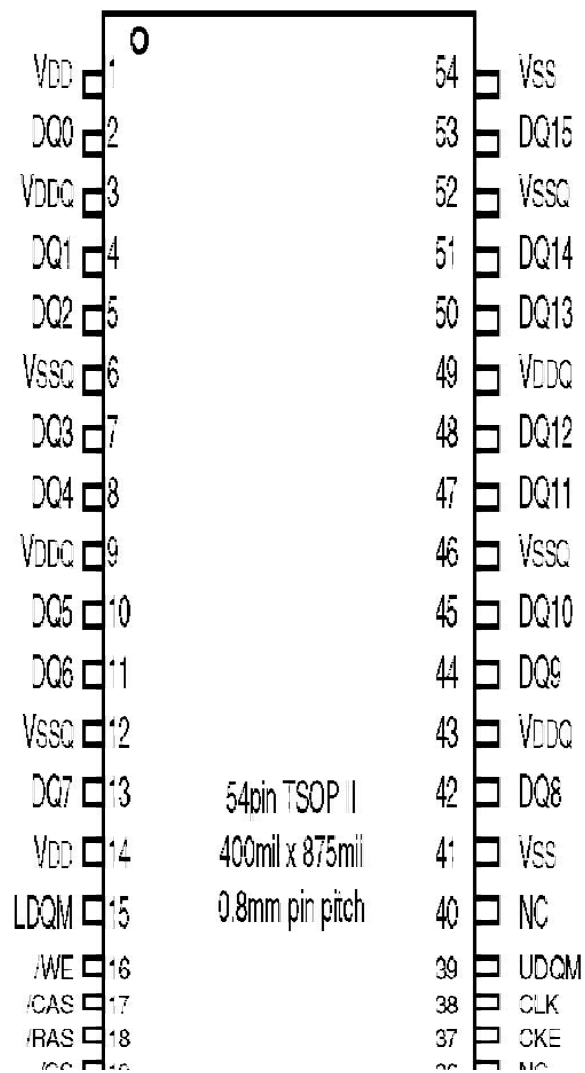


48-Ball CSP (Ball Pitch=0.8mm) Top View, Balls Facing Down (8 x 13mm for MX29LV160T/B; 6 x 8mm for MX29LV160AT/AB)

	A	B	C	D	E	F	G	H
6	A13	A12	A14	A15	A16	$\overline{\text{BYTE}}$	Q15/A-1	GND
5	A9	A8	A10	A11	Q7	Q14	Q13	Q6
4	$\overline{\text{WE}}$	$\overline{\text{RESET}}$	NC	A19	Q5	Q12	VCC	Q4
3	RY/ $\overline{\text{BY}}$	NC	A18	NC	Q2	Q10	Q11	Q3
2	A7	A17	A6	A5	Q0	Q8	Q9	Q1
1	A3	A4	A2	A1	A0	$\overline{\text{OE}}$	$\overline{\text{OE}}$	GND

SYMBOL	PIN NAME
A0~A19	Address Input
Q0~Q14	Data Input/Output
Q15/A-1	Q15(Word mode)/LSB addr(Byte mode)
$\overline{\text{CE}}$	Chip Enable Input
$\overline{\text{WE}}$	Write Enable Input
BYTE	Word/Byte Selection input
RESET	Hardware Reset Pin/Sector Protect Unlock
$\overline{\text{OE}}$	Output Enable Input
RY/ $\overline{\text{BY}}$	Ready/Busy Output

21.5. IC103

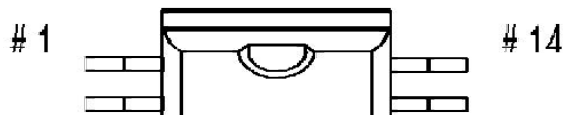


PIN	PIN NAME	DESCRIPTION
CLK	Clock	The system clock input. All other inputs are registered to the SDRAM on the rising edge of CLK.
CKE	Clock Enable	Controls internal clock signal and when deactivated, the SDRAM will be one of the states among power-down, suspend or self-refresh.
\overline{CS}	Chip Select	Enables or disables all inputs except CLK, CKE and DQM.
BAC, BA1	Bank Address	Selects bank to be activated during \overline{RAS} activity. Selects bank to be read/written during CAS activity.
AC - A11	Address	Row Address : RAC - RA11, Column Address : CAC - CA7. Auto-precharge flag: A10.
\overline{RAS} , \overline{CAS} , \overline{WE}	Row Address Strobe, Column Address Strobe, Write Enable	\overline{RAS} , \overline{CAS} and \overline{WE} define the operation. Refer function truth table for details.
LDQM, UDQM	Data Input/Output Mask	Controls output buffers in read mode and masks output data in write mode.
DQ0 - DQ15	Data Input/Output	Multiplexed data input/output pin.
VDD/VSS	Power Supply/Ground	Power supply for internal circuits and input buffers.
VDDQ/VSSQ	Data Output Power/Ground	Power supply for output buffers.
NC	No Connection	No connection.

21.6. IC104

RX - 8581 SA

SOP - 14 pin

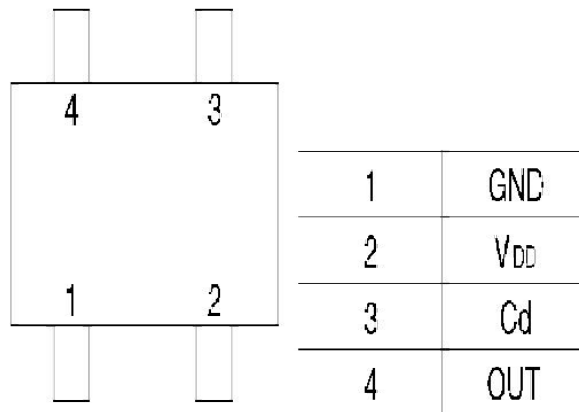


Pin No.	Pin Name	I/O	Description
2	SCL	I	Inputs I2C-BUS communications serial clock.
3	SDA	I/O	Inputs/Outputs address, data, and acknowledges bit is in synchronization with I2C-BUS communications serial clock. This terminal is an open drain on output. Connect the proper pull-up resistor depending on the signal line capacity.
14	FOUT	O	This is a C-MOS output terminal with the output controlled by FOE. In case of FOE = "H", FOUT outputs at 32.768kHz. When no output , FOUT is at the "L" level.
10	FOE	I	This is an input terminal that controls the FOUT output state. When this terminal is at the "H" level, FOUT becomes the output state. And when this terminal is at the "L" level, FOUT stops.
7	/INT	O	Outputs an interrupt signal such as the Alarm, Timer, and Time Update. This terminal is an open drain terminal.
11	VDD	-	Connects to +(positive) power supply.
11	(VDD)	-	Same potential as VDD, but do NOT connect externally. Note: RX-8581SA (SOP-14pin) does not have this terminal.
5	GND	-	Connects to ground.
4, 6, 8, 9, 12, 13	N.C.	-	Not connected to the internal IC. OPEN, or connect to GND or VDD. Note: Make sure that the 14pin~ 22pin in RX-8581NB (SON-22pin) ,which are the N.C. terminals, are mutually connected by an inner cone.

Note:

Be sure to connect a bypass capacitor of more than 0.1 F to the nearest terminal between VDD and GND.

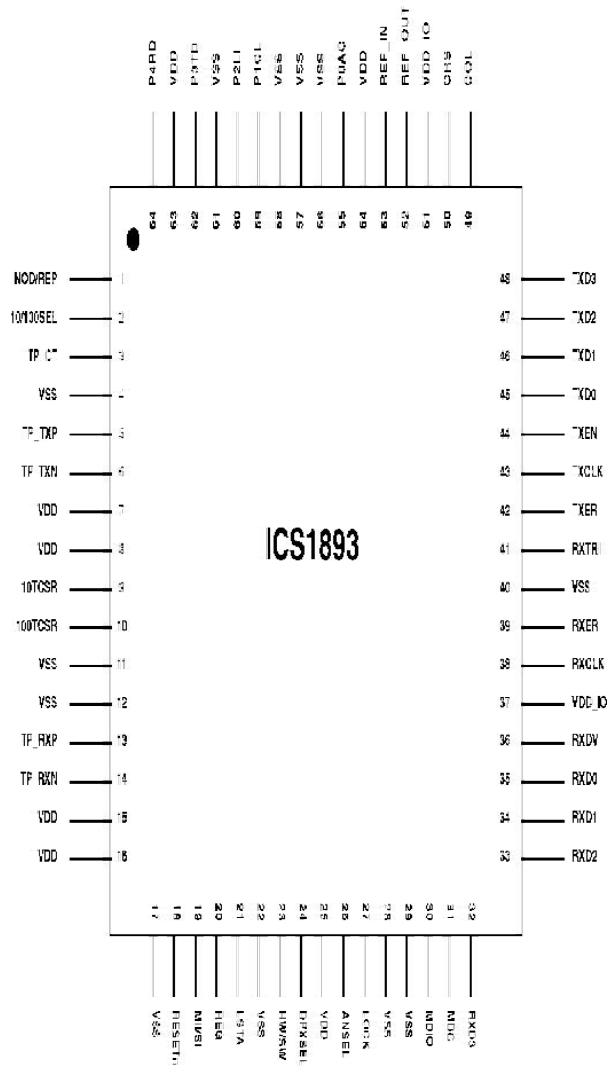
21.7. IC105



SC-82AB
(TOP VIEW)

1	GND
2	VDD
3	Cd
4	OUT

21.8. IC201

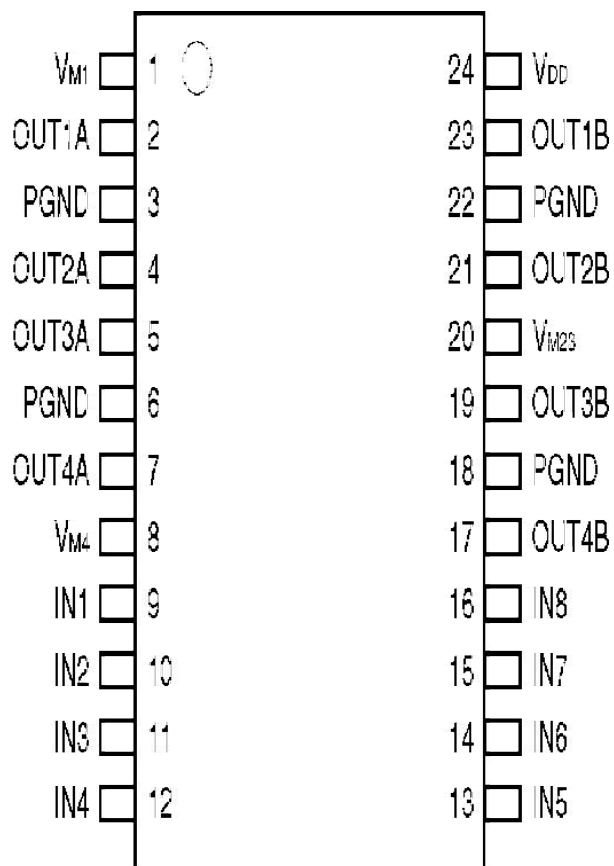


Pin No.	Pin Name	I/O	Description
14	TP_RXN	I	Twisted-Pair Receive (Data) Negative.
13	TP_RXP	I	Twisted-Pair Receive (Data) Positive.
6	TP_TXN	O	Twisted-Pair Transmit (Data) Negative.
5	TP_TXP	O	Twisted-Pair Transmit (Data) Positive.
55	P0AC	I/O	PHY (Address Bit) 0 / Activity LED.
59	P1CL	I/O	PHY (Address Bit) 1 / Collision LED.
60	P2LI	I/O	PHY (Address Bit) 2 / Link Integrity LED.
62	P3TD	I/O	PHY (Address Bit) 3 / Transmit Data LED.
64	P4RD	I/O	PHY (Address Bit) 4 / Receive Data LED.
2	10/100SEL	I/O	10Base-T / 100Base-TX Select.
9	10TCSR	I	10M Transmit Current Set Resistor.
10	100TCSR	I	100M Transmit Current Set Resistor.
26	ANSEL	I	Auto-Negotiation Select.
24	DPXSEL	I/O	Half-Duplex / Full-Duplex Select.
23	HW/SW	I	Hardware/Software (Select).
27	LOCK	O	(Stream Cipher) Lock (Acquired).
21	LSTA	O	Link Status.
19	MII/SI	I	Media Independent Interface / Stream Interface (Select).
1	NOD/REP	I	Node/Repeater (Select).
53	REF_IN	I	(Frequency) Reference Input.
52	REF_OUT	I	(Frequency) Reference Output.
18	RESETn	I	(System) Reset (Active Low).
49	COL	O	Collision (Detect).
50	CRS	O	Carrier Sense.
31	MDC	I	Management Data Clock.
30	MDIO	I/O	Management Data Input/Output.
38	RXCLK	O	Receive Clock.
35 34 33 32	RXD0 RXD1 RXD2 RXD3	I	Receive Data 0-3.
36	RXDV	O	Receive Data Valid.
39	RXER	O	Receive Error.
41	RXTRI	I	Receive (Interface), Tri-State.
43	TXCLK	O	Transmit Clock.
45 46 47 48	TXD0 TXD1 TXD2 TXD3	I	Transmit Data 0-3.
44	TXEN	I	Transmit Enable.
42	TXER	I	Transmit Error.

Pin No.	MII Pin Name	100M Symbol Pin Name	I/O	Description
49	COL	-	NC	Collision (Detect).
50	CRS	SCRS	O	Symbol Carrier Sense.
31	MDC	MDC	I	Management Data Clock.
30	MDIO	MDIO	I/O	Management Data Input/Output.
38	RXCLK	SRCLK	O	(Symbol) Receive Clock.
35 34 33 32	RXD0 RXD1 RXD2 RXD3	SRD0 SRD1 SRD2 SRD3	O	Symbol Receive Data 0-3.
36	RXDV	-	NC	Receive Data Valid.
39	RXER	SRD4	O	Symbol Receive Data 4.
41	RXTRI		I	Receive (Interface), Tri-State.
43	TXCLK	STCLK	O	Symbol Transmit Clock.
45 46 47 48	TXD0-3	STD0 STD1 STD2 STD3	I	Symbol Transmit Data 0-3.
44	TXEN	-	NC	Transmit Enable.
42	TXER	STD4	I	Symbol Transmit Data 4.
49	COL	10COL	O	10M (Serial Interface) Collision (Detect).
50	CRS	10CRS	O	10M (Serial Interface) Carrier Sense.
31	MDC	MDC	I	Management Data Clock.
30	MDIO	MDIO	I/O	Management Data Input/Output.
38	RXCLK	10RCLK	O	10M Receive Clock.
35	RXD0	10RD	-	10M (Serial Interface) Receive Data 0.
34 33 32	RXD1 RXD2 RXD3	-	NC	Receive Data 1-3.
36	RXDV	10RXDV	O	10M (Serial Interface) Receive Data Valid.
39	RXER	-	NC	Receive Error.
41	RXTRI		I	Receive (Interface), Tri-State.
43	TXCLK	10TCLK	O	10M (Serial Interface) Transmit Clock.
45	TXD0	10TD	I	10M (Serial Interface) Transmit Data.
46 47 48	TXD1 TXD2 TXD3	-	NC	Transmit Data 1-3.
44	TXEN	10TXEN	I	10M (Serial Interface) Transmit Enable.
42	TXER	-	NC	Transmit Error.

Pin No.	Pin Name	I/O	Description
20	REG	I	

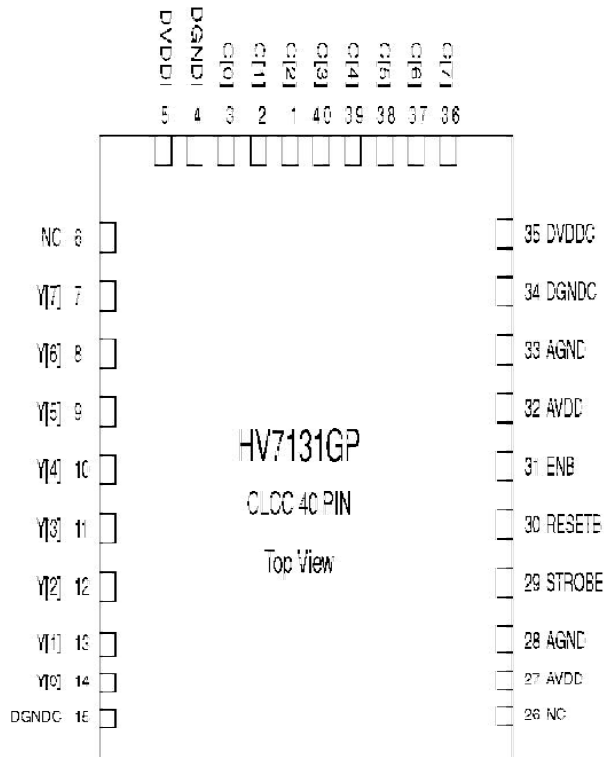
21.9. IC402



Pin No.	Pin Name	Description
1	VM1	1ch motor power supply voltage input terminal
2	OUT1A	H-bridge output terminal (1A)
3	PGND	GND terminal
4	OUT2A	H-bridge output terminal (2A)
5	OUT3A	H-bridge output terminal (2A)
6	PGND	GND terminal
7	OUT4A	H-bridge output terminal (4A)
8	VM4	4ch motor power supply voltage input terminal
9	IN1	Control input terminal (H-bridge1)
10	IN2	Control input terminal (H-bridge1)
11	IN3	Control input terminal (H-bridge2)
12	IN4	Control input terminal (H-bridge2)
13	IN5	Control input terminal (H-bridge3)
14	IN6	Control input terminal (H-bridge3)
15	IN7	Control input terminal (H-bridge4)
16	IN8	Control input terminal (H-bridge4)
17	OUT4B	H-bridge output terminal (4B)
18	PGND	GND terminal
19	OUT3B	H-bridge output terminal (3B)
20	VM23	2, 3ch motor power supply voltage input terminal

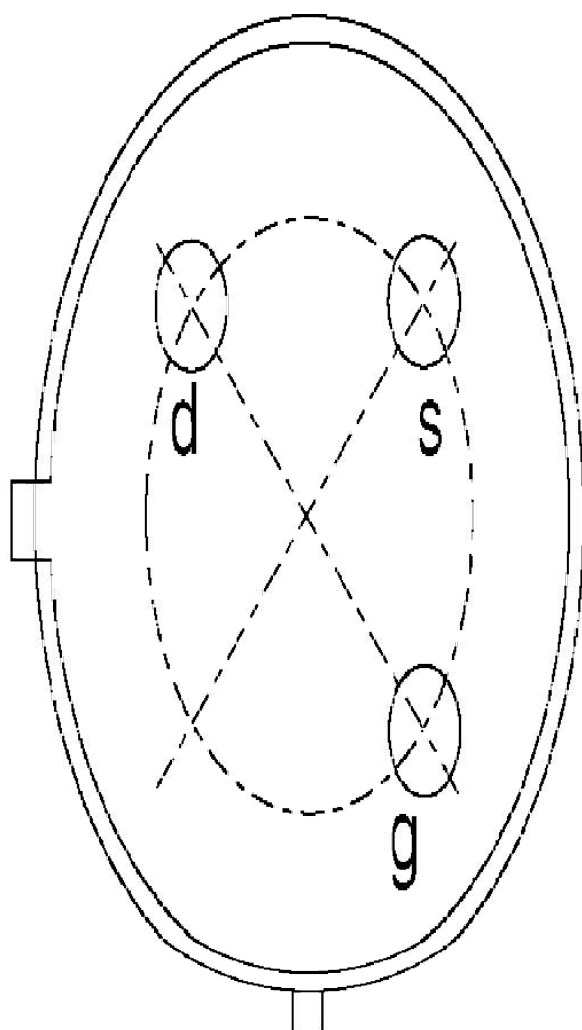
Pin No.	Pin Name	Description
21	OUT2B	H-bridge output terminal (2B)
22	PGND	GND terminal
23	OUT1B	H-bridge output terminal (1B)
24	VDD	Controller power supply voltage input terminal

21.10. IC701



Pin No.	Type	Symbol	Description
1-3	B	C[2:0]	Video Chrominance Data[2:0]
4	G	DGNDI	Digital Ground for I/O Buffer
5	P	DVDDI	Digital Power for I/O Buffer
6	N	NC	No Connection
7-14	O	Y[7:0]	Video Luminance Data[7:0]
15	G	DGNDC	Ground for Internal Digital Block
16	P	DVDDC	Power for Internal Digital Block
17	G	DGNDI	Digital Ground for I/O Buffer
18	I	MCLK	Master Input Clock
19	O	VCLK	Video Output Clock
20	O	HSYNC	Video Horizontal Line Synchronization signal. Image data is valid, when HSYNC is high.
21	O	VSYN	Video Frame Synchronization signal. VSYNC is active at start of image data frame.
22	B	SDA	I2C Standard data I/O port
23	I	SCK	I2C Clock Input
24	G	DGNDI	Digital Ground for I/O Buffer
25	P	DVDDI	Digital Power for I/O Buffer
26	N	NC	No Connection
27	P	AVDD	Power for Analog Block
28	G	AGND	Ground for Analog Block
29	O	STROBE	Strobe Signal Output
30	I	RESETB	Sensor Reset, Low Active
31	I	ENB	Sensor sleep mode is controlled externally by this pin when sleep mode register bit SCTRB[4] is low. ENB low : sleep mode, ENB high : normal mode
32	P	AVDD	Power for Analog Block
33	G	AGND	Ground for Analog Block
34	G	DGNDC	Ground for Internal Digital Block
35	P	DVDDC	Power for Internal Digital Block
36-40	B	C[7:3]	Video Chrominance Data[7:3]

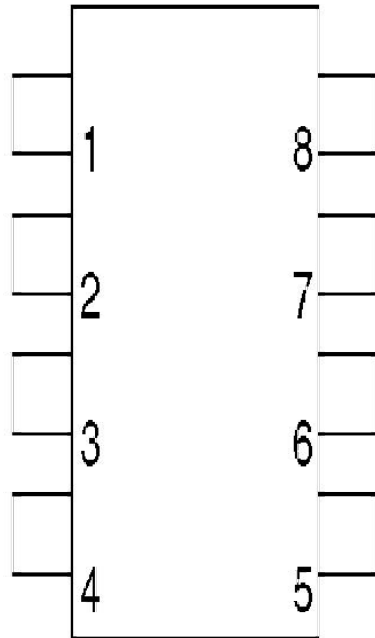
21.11. IC801



Pin	Description
d (Drain)	Power, Drain tarminal
s (Source)	Source output terminal
g (Ground)	Ground terminal

21.12. IC802

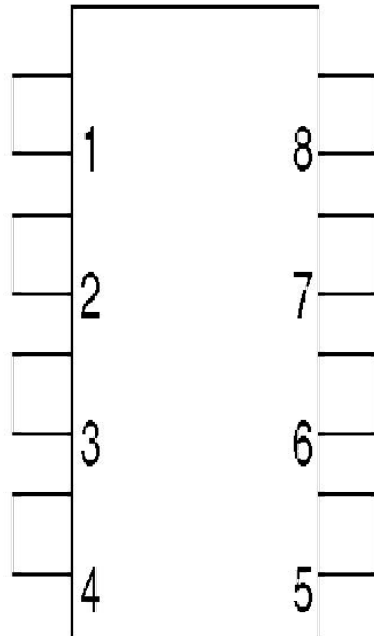
D, M, V Type (Top View)



Pin No.	Pin Name	Description
1	A	OUTPUT
2	A	-INPUT
3	A	+INPUT
4	GND	
5	B	+INPUT
6	B	-INPUT
7	B	OUTPUT
8	V+	

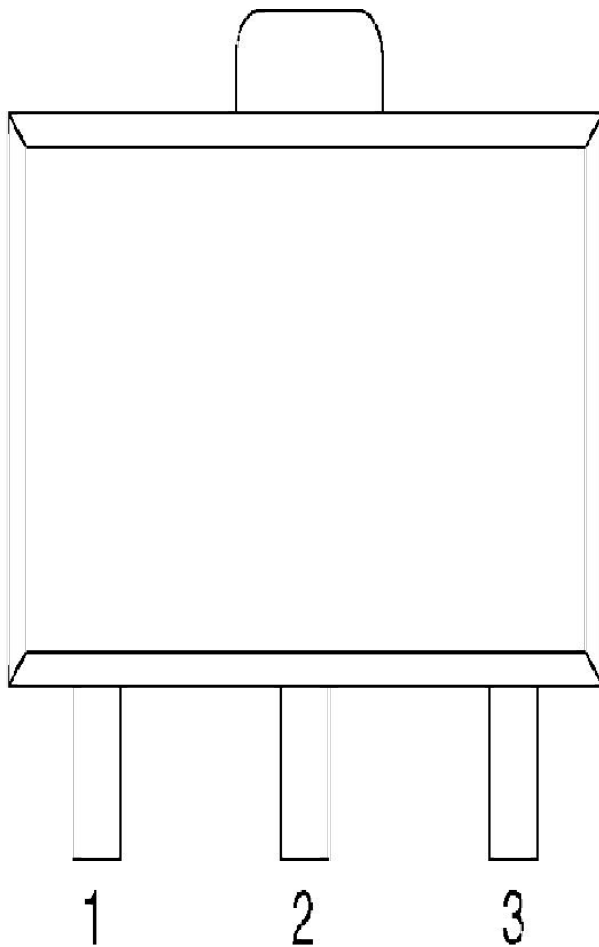
21.13. IC803

D, M, V Type (Top View)



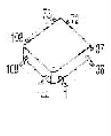










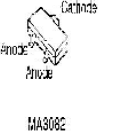

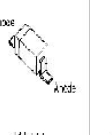

Pin No.	Pin Name	Description
1	A	OUTPUT
2	A	-INPUT
3	A	+INPUT
4	GND	
5	B	+INPUT
6	B	-INPUT
7	B	OUTPUT
8	V+	

21.14. IC804



Pin No.	Pin Name	Function
1	VOUT	Regulated voltage Output
2	VSS	Ground
3	VIN	Supply Voltage Input

22. TERMINAL GUIDE OF ICS, TRANSISTORS AND DIODES

 C2C3YK00004	 C34BPG000134	 C123Z0002444	 C0EE00000201	 C1CB00000009
 C0CBEC000017	 C0DBAG200046 C0CBAC000034 C0CBAC000063	 B1CH0000000008 C0CBAC000119	 L2CD00000021	 C0AB2A00002E C0BB2A000044
 PQVTDTA1-3TU PQVTDTC140E	 MA308E MA7411WK MAZ3G51CL	 MA736	 MA111	 B3AGB0000027

23. HOW TO REPLACE A FLAT PACKAGE IC

23.1. PREPARATION

- PbF (: Pb free) Solder

- Soldering Iron

Tip Temperature of 700°F ± 20°F (370°C ± 10°C)

Note: We recommend a 30 to 40 Watt soldering iron. An expert may be able to use a 60 to 80 Watt iron where someone with less experience could overheat and damage the PCB foil.

- Flux

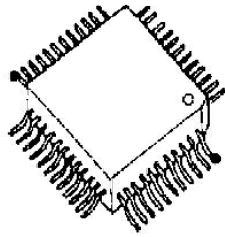
Recommended Flux: Specific Gravity 0.82.

Type RMA (lower residue, non-cleaning type)

Note: See [ABOUT LEAD FREE SOLDER \(PbF: Pb free\)](#) ().

23.2. PROCEDURE

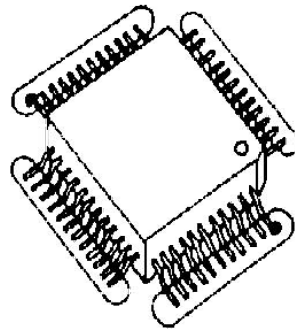
1. Tack the flat pack IC to the PCB by temporarily soldering two diagonally opposite pins in the correct positions on the PCB.



● - - - - - Temporary soldering point.

Be certain each pin is located over the correct pad on the PCB.

2. Apply flux to all of the pins on the IC.




○ - - - - - Flux

3. Being careful to not unsolder the tack points, slide the soldering iron along the tips of the pins while feeding enough solder to the tip so that it flows under the pins as they are heated.

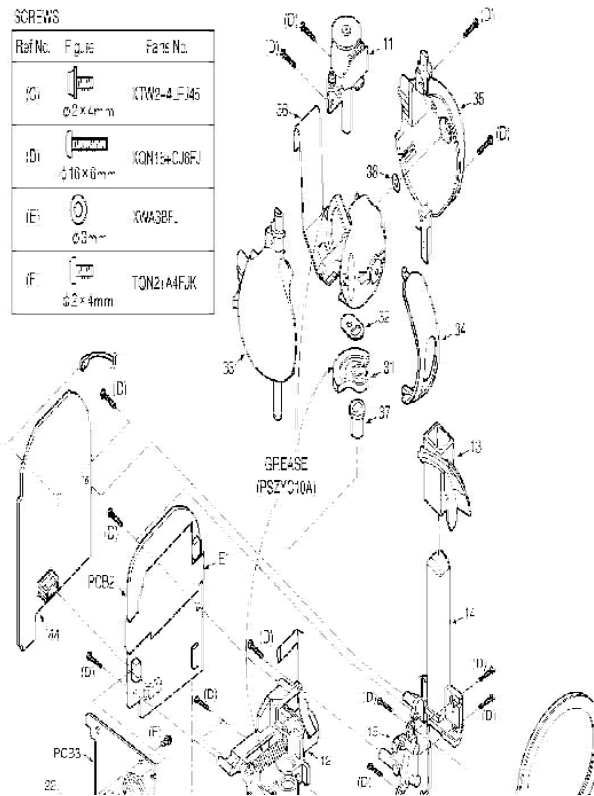
23.3. REMOVING SOLDER FROM BETWEEN PINS

1. Add a small amount of solder to the bridged pins.
2. With a hot iron, use a sweeping motion along the flat part of the pin to draw the solder from between the adjacent pads.

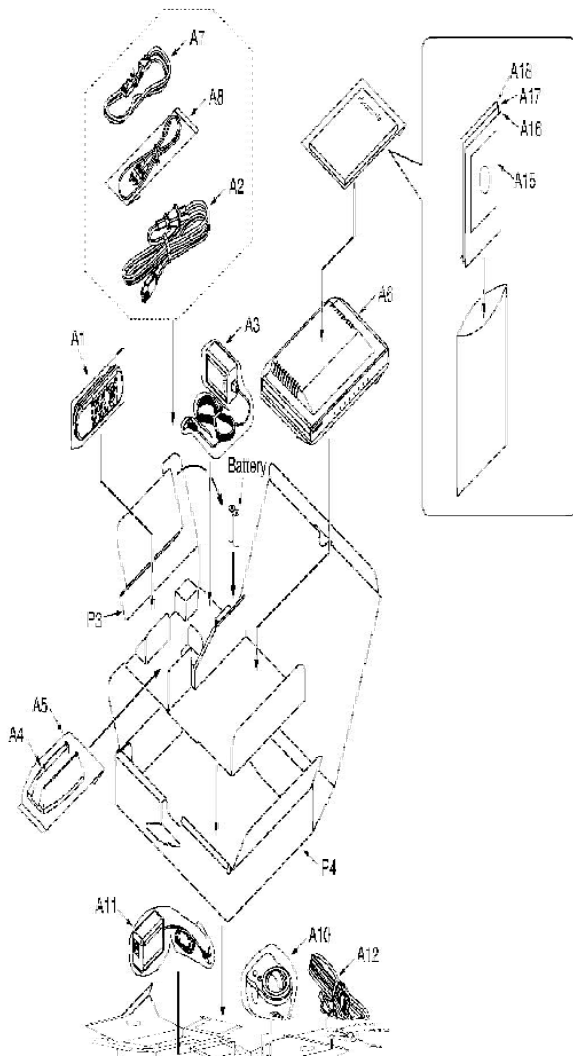
24. CABINET AND ELECTRICAL PARTS LOCATION (BL-WV10A)

(E)		XTW26-8PFJ7
	φ26×8mm	

25. CABINET AND ELECTRICAL PARTS LOCATION (BL-C30A)



26. ACCESSORIES AND PACKING MATERIALS (BL-MS103A)



27. REPLACEMENT PARTS LIST (BL-MS103A)

Note:

1. RTL (Retention Time Limited)

The marking (RTL) indicates that the Retention Time is limited for this item.

After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability depends on the type of assembly and the laws governing parts and product retention. At the end of this period, the assembly will no longer be available.

2. Important safety notice

Components identified by the  mark indicates special characteristics important for safety. When replacing any of these components, only use specified manufacture's parts.

3. The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.

4. ISO code (Example: ABS-94HB) of the remarks column shows quality of the material and a flame resisting grade about plastics.

5. RESISTORS & CAPACITORS

Unless otherwise specified;

All resistors are in ohms (Ω), k=1000 , M=1000k

All capacitors are in MICRO FARADS (μ F), p= (pF)

*Type & Wattage of Resistor

27.1. ACCESSORIES AND PACKING MATERIALS

Ref. No.	Part No.	Part Name & Description	Remarks
A1	PSWEV10A	REMOTE CONTROLLER(FOR BL-WV10A)	
A2	PSJA1069Z	POWER CORD(FOR BL-WV10A)	
A3	PQLV202Y	AC ADAPTOR(FOR BL-WV10A)	
A4	PSYLWV10A	STAND(FOR BL-WV10A)	ABS-V0
A5	XZB10X20A04	PROTECTION COVER(FOR BL-WV10A STAND)	
A6	XZB25X34A04	PROTECTION COVER(FOR BL-WV10A SET)	
A7	PQJA10138Z	CORD,ETHERNET CABLE(FOR BL-WV10A)	
A8	PSJP01R02Z	PLUG,VIDEO CABLE(FOR BL-WV10A)	
A9	XZB05X08A03	PROTECTION COVER(FOR SCREWS etc.)	
A10	XZB20X30A05	PROTECTION COVER(FOR BL-C30A SET,MANUAL etc)	
A11	PQLV202Y	AC ADAPTOR(FOR BL-C30A)	
A12	PSJA1069Z	POWER CORD(FOR BL-C30A)	
A13	PQHE5004Y	SCREW(FOR BL-C30A)	
A14	XWG35FJ	WASHER(FOR BL-C30A)	
A15	PSQX3229YCD	INSTRUCTION BOOK(CD-ROM)	
A16	PSQW2374Z	LEAFLET	
A17	PSQX3232Y	INSTRUCTION BOOK(SETUP GUIDE FOR,BL-WV10A)	
A18	PSQX3749Z	INSTRUCTION BOOK(OPERATING INSTRUCTIONS,FOR BL-WV10A)	
P1	PSPG1303Z	PACKING CASE	
P2	PSPD1332Z	CUSHION	
P3	PSPD1276Z	CUSHION	
P4	PSPK2339Z	GIFT BOX	
P5	PSQA3023Z	SET LABEL	
P6	PSPN1179Z	ACCESSORY BOX	

28. REPLACEMENT PARTS LIST (BL-WV10A)

Note:

1. RTL (Retention Time Limited)

The marking (RTL) indicates that the Retention Time is limited for this item.

After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability depends on the type of assembly and the laws governing parts and product retention. At the end of this period, the assembly will no longer be available.

2. Important safety notice

Components identified by the mark indicates special characteristics important for safety. When replacing any of these components, only use specified manufacture's parts.

3. The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.

4. ISO code (Example: ABS-94HB) of the remarks column shows quality of the material and a flame resisting grade about plastics.

5. RESISTORS & CAPACITORS

Unless otherwise specified;

All resistors are in ohms (Ω), k=1000 , M=1000k

All capacitors are in MICRO FARADS (μ F), p= (pF)

*Type & Wattage of Resistor

Type		
ERC:Solid	ERX:Metal Film	PQRD:Carbon
ERD:Carbon	ERG:Metal Oxide	PQRO:Fuse
PQ4R:Chip	ERC:Metal Film	ERF:Wire Wound
Wattage		
10,16,18,18W	14,25,32,144W	12,50,50,12W
1,1W	2,2W	5,5W
ECFD:Semi-Conductor	ECQD,ECQD,PQCBQ,PQWP: Ceramic	
ECQS:Styrol	ECQM,ECQV,ECQE,ECQU,ECGB: Polyester	
PQCBX,ECUV:Chip	ECDE,ECSZ,ECOS: Electrolytic	
ECMS:Mica	ECDF: Polypropylene	
Voltage		
ECQ Type	ECQG ECGW Type	ECSZ Type Others
1H: 50V	05: 50V	0F: 3.15V
24: 100V	: 100V	0J: 6.3V
2E: 250V	2: 200V	1A: 10V
2H: 500V		1V: 35V
		150,1H: 50V
		1J: 63V
		2A: 100V

28.1. CABINET AND ELECTRICAL PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
1	PSYMWV10A	CABINET BODY	PS-V0
2	PSYFWV10A	CABINET COVER	PS-V0
2-1	PSHA1016Z	RUBBER PARTS,LEGS	
3	PSSA1028Y	ANTENNA	
4	PSGT2679Z	NAME PLATE	
PCB1	PSWPVW10A	MAIN BOARD ASSY	

29. REPLACEMENT PARTS LIST (BL-C30A)

Note:

1. RTL (Retention Time Limited)

The marking (RTL) indicates that the Retention Time is limited for this item.

After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability depends on the type of assembly and the laws governing parts and product retention. At the end of this period, the assembly will no longer be available.

2. Important safety notice

Components identified by the mark indicates special characteristics important for safety. When replacing any of these components, only use specified manufacture's parts.

- The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.
- ISO code (Example : ABS-94HB) of the remarks column shows quality of the material and a flame resisting grade about plastics.

5. RESISTORS & CAPACITORS

Unless otherwise specified;

All resistors are in ohms (Ω), k=1000 , M=1000k

All capacitors are in MICRO FARADS (μ F), p= (μ F)

*Type & Wattage of Resistor

Type		
ERC:Solid	ERX:Metal Film	PQR:Carbon
ERD:Carbon	ERG:Metal Oxide	PQR:Fuse
PQMR:Chip	ERC:Metal Film	ERF:Wire Wound

Wattage		
10,16,18,18W	14,25,32,14W	12,50,5,11,12W
1,1W	2,2W	5,5W

ECFD:Semi-Conductor	ECQD,ECQD,PQCBQ,PCVP: Ceramic
ECOS:Styrol	ECQM,ECQV,ECQIE,ECQU,ECGB: Polyester
PQCBX,EGUV:Chip	ECEA,ECSZ,ECOS: Electrolytic
ECMS:Mica	ECOP: Polypropylene

Voltage			
ECQ Type	ECQG ECQW Type	ECSZ Type	Others
1H:50V	05:50V	0F:3.15V	0J:6.3V
24:100V	1:100V	1A:10V	1A:10V
2E:250V	2:200V	1W:35V	1C:6V
2H:500V		0J:6.3V	1E:25:25V
			2A:100V

29.1. CABINET AND ELECTRICAL PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
11	PSWQ1C10A	TILT MOTOR UNIT	ABS-HB
12	PSWQC30N	PAN MOTOR UNIT	ABS-HB
13	PSSA1032Z	ANTENNA COVER	ABS-V0
14	PSHR1338Y	ANTENNA	ABS-V0
15	PSHR1337Z	SPACER,BOARD SUPPORT	ABS-V0
16	PSBC1042Z1	LENS BUTTON	ABS-HB
17	PSHX1232Z	SPACER	
18	PSMH1273Z	PAN MOTOR ANGLE	
19	PSJE1042Z	LEAD WIRE,SUB FLAT CABLE	
20	PSMH1275Z	CONNECT ANGLE	
21	PSKM1117V1	CABINET BODY	ABS-V0
22	PSMH1291Z	ANGLE	
23	PSKF1087Y1	CABINET COVER	ABS-V0
24	PSBD1017Z1	KNOB,SLIDE	
25	PSHA1014Z	RUBBER PARTS,LEGS	
26	PSGT2562Z	NAME PLATE	
27	PSQT2112Z	FCC CAUTION LABEL	
28	PSQT2101Z	JACK LABEL	
29	PSQA2830Z	CAUTION LABEL	
30	PSMX1027Z	INSULATOR	
31	PSHR1323Y	GUIDE,PAN GEAR	
32	PSHX1236Z	SPACER	
33	PSKE1074Z1	EYE LEFT COVER	ABS-V0

Ref. No.	Part No.	Part Name & Description	Remarks
34	PSKV1043Z1	EYE CENTER COVER	ABS-V0
35	PSKE1075Z1	EYE RIGHT COVER	ABS-V0
36	PSLP1267Z	LENS UNIT	ABS-HB
37	PSHR1335Z	SPACER	
38	PSNPB025050	SPACER	
39	PSMY1027Z	HEAT SINK	
40	PSMY1028Z	HEAT SINK	
41	PSMH1294Z	METAL PARTS	
42	PSMX1026Z	INSULATOR	
43	PSME1009Z	COVER	
44	PSWP4C30A	RF UNIT	

29.2. MAIN BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB2	PSWP1C30A	MAIN BOARD ASS'Y (RTL)	
		(ICS)	
IC51	C0CBCAC00084	IC	
IC52	C0CBCAC00060	IC	
IC62	C0DBAGZ00046	IC	
IC101	C2DBYK000004	IC	
IC102	PSWP1C30A	There is no parts supply of only IC102. Please order PCB2.	
IC103	C3ABPG000134	IC	
IC104	C1ZBZ0002444	IC	
IC105	C0EBE0000231	IC	
IC201	C1CB00001919	IC	S
IC402	C0GBE0000017	IC	
		(TRANSISTORS)	
IC61	B1DHCD000018	TRANSISTOR(SI)	
Q61	PQVTDTA143TU	TRANSISTOR(SI)	S
Q201	PQVTDTA143TU	TRANSISTOR(SI)	S
Q202	PQVTDTA143TU	TRANSISTOR(SI)	S
Q401	PQVTDTA143TU	TRANSISTOR(SI)	S
Q402	PQVTDTA143TU	TRANSISTOR(SI)	S
		(DIODES)	
D61	MA736	DIODE(SI)	S
D101	MA741WK	DIODE(SI)	S
		(CAPACITORS)	
C51	ECUV1A105ZFV	1	
C52	ECUV1A105ZFV	1	
C53	ECJ0EF1C104Z	0.1	
C54	ECJ0EF1C104Z	0.1	
C56	ECJ0EF1C104Z	0.1	
C57	ECJ0EB1H102K	0.001	
C61	PFCX1EY106ZF	10	S
C62	ECUV1E104ZFV	0.1	
C64	ECUV1C224ZFV	0.22	
C65	F4Z0J4760001	47	
C66	ECUV1E104ZFV	0.1	
C67	F1K0J1060020	10	
C102	ECJ0EC1H101J	100p	
C103	ECJ0EF1C104Z	0.1	
C104	ECJ0EF1C104Z	0.1	
C105	ECJ0EF1C104Z	0.1	
C106	ECJ0EF1C104Z	0.1	
C107	ECJ0EF1C104Z	0.1	
C108	ECJ0EC1H101J	100p	
C109	ECJ0EF1C104Z	0.1	
C110	ECJ0EC1H101J	100p	
C111	ECJ0EF1C104Z	0.1	
C112	ECJ0EC1H101J	100p	
C113	ECJ0EF1C104Z	0.1	
C115	ECJ0EC1H101J	100p	
C116	ECJ0EF1C104Z	0.1	

Ref. No.	Part No.	Part Name & Description	Remarks
C117	ECJ0EF1C104Z	0.1	
C118	ECJ0EF1C104Z	0.1	
C119	ECJ0EC1H101J	100p	
C120	ECJ0EF1C104Z	0.1	
C121	ECJ0EC1H101J	100p	
C122	ECJ0EF1C104Z	0.1	
C124	ECJ0EC1H101J	100p	
C125	ECJ0EF1C104Z	0.1	
C126	ECJ0EC1H101J	100p	
C127	ECJ0EF1C104Z	0.1	
C128	F1J0J1060006	10	
C129	ECJ0EC1H101J	100p	
C130	ECJ0EF1C104Z	0.1	
C131	ECJ0EC1H101J	100p	
C132	ECJ0EF1C104Z	0.1	
C133	ECJ0EC1H101J	100p	
C134	ECJ0EF1C104Z	0.1	
C135	ECJ0EC1H101J	100p	
C136	ECJ0EF1C104Z	0.1	
C137	ECJ0EC1H101J	100p	
C138	ECJ0EF1C104Z	0.1	
C139	ECJ0EC1H101J	100p	
C140	ECJ0EF1C104Z	0.1	
C141	ECJ0EC1H101J	100p	
C142	ECJ0EF1C104Z	0.1	
C143	F1J0J1060006	10	
C144	ECJ0EC1H101J	100p	
C145	ECJ0EF1C104Z	0.1	
C146	F1J0J1060006	10	
C147	ECJ0EC1H101J	100p	
C148	ECJ0EF1C104Z	0.1	
C149	ECUV1A105ZV	1	
C150	ECJ0EF1C104Z	0.1	
C151	ECJ0EC1H330J	33p	
C152	ECUV1C224ZV	0.22	
C154	ECJ0EF1C104Z	0.1	
C155	ECJ0EC1H121J	120p	
C156	ECJ0EF1C104Z	0.1	
C157	ECJ0EF1C104Z	0.1	
C158	ECJ0EC1H121J	120p	
C159	ECJ0EC1H121J	120p	
C160	ECJ0EC1H121J	120p	
C161	ECJ0EC1H121J	120p	
C162	ECJ0EC1H121J	120p	
C163	ECJ0EC1H121J	120p	
C164	ECJ0EC1H121J	120p	
C165	ECJ0EC1H121J	120p	
C166	ECJ0EC1H121J	120p	
C167	ECJ0EC1H221J	220p	
C202	ECJ0EC1H101J	100p	
C203	ECJ0EC1H101J	100p	
C204	ECJ0EC1H101J	100p	
C205	ECJ0EC1H101J	100p	
C206	ECJ0EC1H101J	100p	
C207	ECJ0EC1H101J	100p	
C208	ECJ0EF1C104Z	0.1	
C209	ECJ0EC1H270J	27p	

0.00	0.00000000	0.0
------	------------	-----

Ref. No.	Part No.	Part Name & Description	Remarks
C210	ECJ0EC1H330J	33p	
C211	ECJ0EF1C104Z	0.1	
C212	ECJ0EF1C104Z	0.1	
C213	ECJ0EF1C104Z	0.1	
C214	ECJ0EF1C104Z	0.1	
C215	ECJ0EF1C104Z	0.1	
C216	ECJ0EF1C104Z	0.1	
C217	ECJ0EF1C104Z	0.1	
C218	ECJ0EB1H102K	0.001	
C219	ECJ0EC1H040C	4p	
C221	ECJ0EF1C104Z	0.1	
C222	ECJ0EC1H221J	220p	
C223	ECJ0EF1C104Z	0.1	
C402	ECJ0EF1C104Z	0.1	
C404	ECJ0EF1C104Z	0.1	
C414	ECJ0EF1C104Z	0.1	
C415	ECJ0EF1C104Z	0.1	
C416	ECJ0EF1C104Z	0.1	
C417	F1J0J1060006	10	
C418	F1J0J1060006	10	
C419	ECJ0EC1H330J	33p	
C420	ECJ0EF1C104Z	0.1	
C421	ECJ0EC1H101J	100p	
C422	ECJ0EC1H150J	15p	
		(CONNECTORS)	
CN51	K1KB20B00045	CONNECTOR,A20P	
CN101	PQJS15A94Z	CONNECTOR,A15P	S
CN201	K1KA20A00303	CONNECTOR,A20P	
CN401	K1MN04B00042	CONNECTOR,A4P	
CN402	K1MN28B00058	CONNECTOR,A28P	
		(COILS AND CERAMIC FILTER)	
L61	G1A220GA0005	COIL	
L101	G1C100K00031	COIL	
L102	J0JCC0000368	CERAMIC FILTER	
L103	EXC28BA221U	CERAMIC FILTER	
L104	EXC28BA221U	CERAMIC FILTER	
L105	EXC28BA221U	CERAMIC FILTER	
L106	EXC28BA221U	CERAMIC FILTER	
L107	J0JCC0000368	CERAMIC FILTER	
L108	J0JCC0000368	CERAMIC FILTER	
L109	J0JCC0000368	CERAMIC FILTER	
L110	J0JCC0000368	CERAMIC FILTER	
L111	J0JCC0000368	CERAMIC FILTER	
L112	J0JCC0000368	CERAMIC FILTER	
L202	G1CR12J00003	COIL	
L203	J0JDC0000076	CERAMIC FILTER	
L204	J0JDC0000076	CERAMIC FILTER	
L404	J0JCC0000192	COIL	
L405	J0JCC0000192	COIL	
L406	J0JCC0000192	COIL	
L407	J0JCC0000192	COIL	
L408	J0JCC0000149	COIL	
L409	J0JCC0000149	COIL	
L410	J0JCC0000149	COIL	
L411	J0JCC0000149	COIL	

ETI	XXXXXXXXXX	XXX	
-----	------------	-----	--

Ref. No.	Part No.	Part Name & Description	Remarks
		(RESISITORS)	
R61	ERJ3GEYJ100	10	
R62	ERJ3GEYJ100	10	
R63	ERJ3GEYJ244	240k	
R64	ERJ6GEY0R00	0	
R106	ERJ2GEJ470	47	
R107	ERJ2GEJ470	47	
R108	ERJ2GEJ470	47	
R109	ERJ2GEJ470	47	
R111	ERJ2GEJ470	47	
R112	ERJ2GEJ470	47	
R113	ERJ2GEJ470	47	
R115	ERJ2GEJ470	47	
R116	ERJ2GEJ470	47	
R117	ERJ2GEJ470	47	
R118	ERJ2GEJ470	47	
R121	ERJ2GEJ470	47	
R122	ERJ2GEJ470	47	
R123	ERJ2GEJ103	10k	
R124	ERJ2GE0R00	0	
R125	ERJ2GEJ103	10k	
R127	ERJ2GEJ221	220	
R128	ERJ2GEJ103	10k	
R130	ERJ2GEJ221	220	
R131	ERJ2GEJ103	10k	
R132	ERJ2GEJ472X	4.7k	
R133	ERJ2GEJ472X	4.7k	
R134	ERJ2GEJ103	10k	
R135	ERJ2GEJ471	470	
R136	ERJ2GEJ103	10k	
R137	ERJ2GEJ102	1k	
R138	ERJ2GEJ103	10k	
R139	ERJ2GEJ103	10k	
R148	ERJ2GEJ103	10k	
R149	ERJ2GEJ103	10k	
R150	ERJ2GEJ103	10k	
R151	ERJ2GEJ103	10k	
R152	ERJ2GEJ103	10k	
R153	ERJ2GEJ103	10k	
R154	ERJ2GEJ103	10k	
R155	ERJ2GEJ103	10k	
R157	ERJ2GEJ470	47	
R160	ERJ2GEJ103	10k	
R161	ERJ2GEJ103	10k	
R162	ERJ2GE0R00	0	
R163	ERJ2GEJ470	47	
R165	ERJ2GEJ470	47	
R201	ERJ2GEJ470	47	
R202	ERJ2GEJ470	47	
R203	ERJ2GEJ470	47	
R204	ERJ2GEJ470	47	
R205	ERJ2GEJ470	47	
R206	ERJ2GEJ470	47	
R207	ERJ2GEJ102	1k	
R209	ERJ2GEJ103	10k	
R211	ERJ2GEJ103	10k	

Ref. No.	Part No.	Part Name & Description	Remarks
R212	ERJ2GEJ103	10k	
R213	ERJ2GEJ103	10k	
R214	ERJ2GEJ103	10k	
R215	ERJ2GEJ103	10k	
R217	ERJ3EKF1002	10k	
R218	ERJ3EKF1541	1.54k	
R219	ERJ3EKF2001	2k	
R220	ERJ3EKF56R2	56.2	
R221	ERJ3EKF56R2	56.2	
R224	ERJ2GE0R00	0	
R225	ERJ3EKF51R1	51.1	
R226	ERJ3EKF51R1	51.1	
R401	ERJ2GEJ330	33	
R402	ERJ2GE0R00	0	
R404	ERJ2GEJ103	10k	
		(COMPONENTS PARTS)	
RA106	D1H84704A024	RESISTOR ARRAY	
RA107	D1H81034A024	RESISTOR ARRAY	
RA108	D1H84704A024	RESISTOR ARRAY	
RA109	D1H84704A024	RESISTOR ARRAY	
RA110	D1H84704A024	RESISTOR ARRAY	
RA111	D1H84704A024	RESISTOR ARRAY	
RA114	D1H84704A024	RESISTOR ARRAY	
RA201	D1H84704A024	RESISTOR ARRAY	
RA401	D1H82214A024	RESISTOR ARRAY	
RA402	D1H82214A024	RESISTOR ARRAY	
		(SWITCH)	
SW201	K0D122A00098	SWITCH	
SW202	K0D122A00098	SWITCH	
		(CRYSTAL OSCILLATOR)	
X201	H0J250500028	CRYSTAL OSCILLATOR	
		(OTHERS)	
E1	PSHX1228Z	PLASTIC PARTS	

29.3. I/O BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB3	PSWP2C30N	I/O BOARD ASS'Y (RTL)	
IC1	B1DHCD000018	TRANSISTOR(SI)	
IC2	C0DBAGZ00046	IC	
		(TRANSISTORS)	
Q1	PQVTDTC143E	TRANSISTOR(SI)	S
		(DIODES)	
D1	MA736	DIODE(SI)	S
D2	MA3082	DIODE(SI)	S
D3	MA736	DIODE(SI)	S
D4	MA111	DIODE(SI)	S
		(BATTERY)	
BAT1	CR-1632/1HF	LITHIUM BATTERY	
		(CAPACITORS)	
C1	F2A1C2220066	ELECTROLYTIC CAPACITOR AL	
C2	PFCX1EY106ZF	2200	S
C4	ECUV1A105ZFV	1	
C5	ECUV1C224ZFV	0.22	
C6	F4Z0J4760001	47	
C7	ECUV1E104ZFV	0.1	
C8	ECJ3YB0J106K	10	
C10	F1K3A222A002	0.0022	
C11	ECUV1E104ZFV	0.1	
C12	ECUV1E104ZFV	0.1	
C13	ECUV1E104ZFV	0.1	
C14	ECUV1H102KBV	0.001	
C15	ECUV1E104ZFV	0.1	
C16	ECJ0EF1C104Z	0.1	
C17	ECUV1A105ZFV	1	
		(JACKS AND CONNECTORS)	
CN1	K2ED2A000001	DC JACK	
CN2	K2LC108A0007	MODULAR JACK	
CN3	K1KA20A00317	CONNECTOR,A20P	
		(COILS)	
L1	G0B150G00002	COIL	
L2	G1C6R8Z00005	COIL	
L3	G1C220ZA0011	COIL	
L4	G1C100M00027	COIL	
		(RESISITORS)	
R1	ERJ3GEYJ103	10k	
R2	ERJ3GEYJ100	10	
R3	ERJ3GEYJ244	240k	
R4	ERJ3GEYJ122	1.2k	
R5	ERJ3GEYJ750	75	
R6	ERJ3GEYJ750	75	
R8	ERJ3GEYJ750	75	
R9	ERJ3GEYJ750	75	
R10	ERJ3GEYJ100	10	
R12	ERJ2GEJ101	100	
R13	ERJ2GEJ272	2.7k	

Ref. No.	Part No.	Part Name & Description	Remarks
		(VARISTORS)	
SA1	D4ZZ00000024	VARISTOR (SAUGE ABSORBER)	
SA2	D4ZZ00000024	VARISTOR (SAUGE ABSORBER)	
SA3	D4ZZ00000024	VARISTOR (SAUGE ABSORBER)	
SA4	D4ZZ00000024	VARISTOR (SAUGE ABSORBER)	
SA5	D4ZZ00000024	VARISTOR (SAUGE ABSORBER)	
		(TRANSFORMER)	
T1	G5B1C0000011	TRANSFORMER	

29.4. SUB BOARD PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
PCB4	PSWP3C30N	SUB BOARD ASSALY (RTL)	
		(ICS)	
IC801	L2CD00000021	PHOTO ELECTRIC TRANSDUCER	
IC802	C0ABBA000025	IC	
IC803	C0BBBA000044	IC	
IC804	C0CBABC00119	IC	
		(TRANSISTORS)	
Q801	PQVTDTC143E	TRANSISTOR(SI)	S
Q802	PQVTDTC143E	TRANSISTOR(SI)	S
		(DIODES)	
D801	MA111	DIODE(SI)	S
LED801	B3AGB0000027	LED	
		(CAPACITORS)	
C801	ECJ0EB1H102K	0.001	
C802	ECJ0EB1C223K	0.022	
C803	ECJ3YB0J106K	10	
C804	ECJ0EB1H102K	0.001	
C805	ECJ0EB1A104K	0.1	
C806	ECJ3YB0J106K	10	
C807	ECJ0EB1A104K	0.1	
C808	ECJ0EB1H102K	0.001	
C809	ECJ0EB1A104K	0.1	
C810	ECJ3YF1A106Z	10	
C811	ECJ3YF1A106Z	10	
C812	ECJ0EB1A104K	0.1	
C814	ECJ3YF1A106Z	10	
C815	ECJ0EF1C104Z	0.1	
C816	ECUV1E104ZFV	0.1	
C818	ECJ3YF1E105Z	1	
C819	ECJ0EB1H102K	0.001	
		(CONNECTOR)	
CN801	PQJS15A94Z	CONNECTOR,A15P	S
		(COIL)	
L801	G1C100K00031	COIL	

Ref. No.	Part No.	Part Name & Description	Remarks
		(RESISTORS)	
R801	ERJ2GEJ473	47k	
R802	ERJ2RHD103	10k	
R803	ERJ2GE0R00	0	
R804	D1BA1504A015	1.5M	
R805	ERJ2RHD103	10k	
R806	ERJ2GEJ104	100k	
R807	D1BA1504A015	1.5M	
R808	ERJ2GEYJ474	470k	S
R809	ERJ2GEJ244	240k	
R810	ERJ3GEYJ560	56	
R811	ERJ3GEYJ750	75	
R812	ERJ2RKF3303	33k	
R813	ERJ2RKF2003	200k	
R814	ERJ2RKF1203	120k	
R818	ERJ2GEJ102	1k	
R819	ERJ2GEJ103	10k	
		(SWITCH)	
SW801	K0H1BA000401	SWITCH	
SW802	K0H1BA000401	SWITCH	

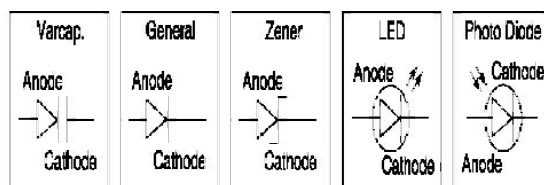
29.5. GREASE


Ref. No.	Part No.	Part Name & Description
EC1	PSZYC10A	GREASE

30. FOR THE SCHEMATIC DIAGRAM

Note:

1. DC voltage measurements are taken with an oscilloscope or a tester with a ground.
2. The schematic diagrams and circuit board may be modified at any time with the development of new technology.



Important safety notice
Components identified by  mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

31. SCHEMATIC DIAGRAM (BL-WV10A)

32. SCHEMATIC DIAGRAM (BL-C30A)

32.1. WAVEFORM

33. CIRCUIT BOARD (BL-WV10A)

33.1. COMPONENT VIEW

33.2. BOTTOM VIEW

34. CIRCUIT BOARD (BL-C30A)

34.1. MAIN BOARD (COMPONENT VIEW)

34.2. MAIN BOARD (BOTTOM VIEW)

34.3. I/O BOARD (COMPONENT VIEW)

34.4. I/O BOARD (BOTTOM VIEW)

34.5. SUB BOARD (COMPONENT VIEW)

34.6. SUB BOARD (BOTTOM VIEW)

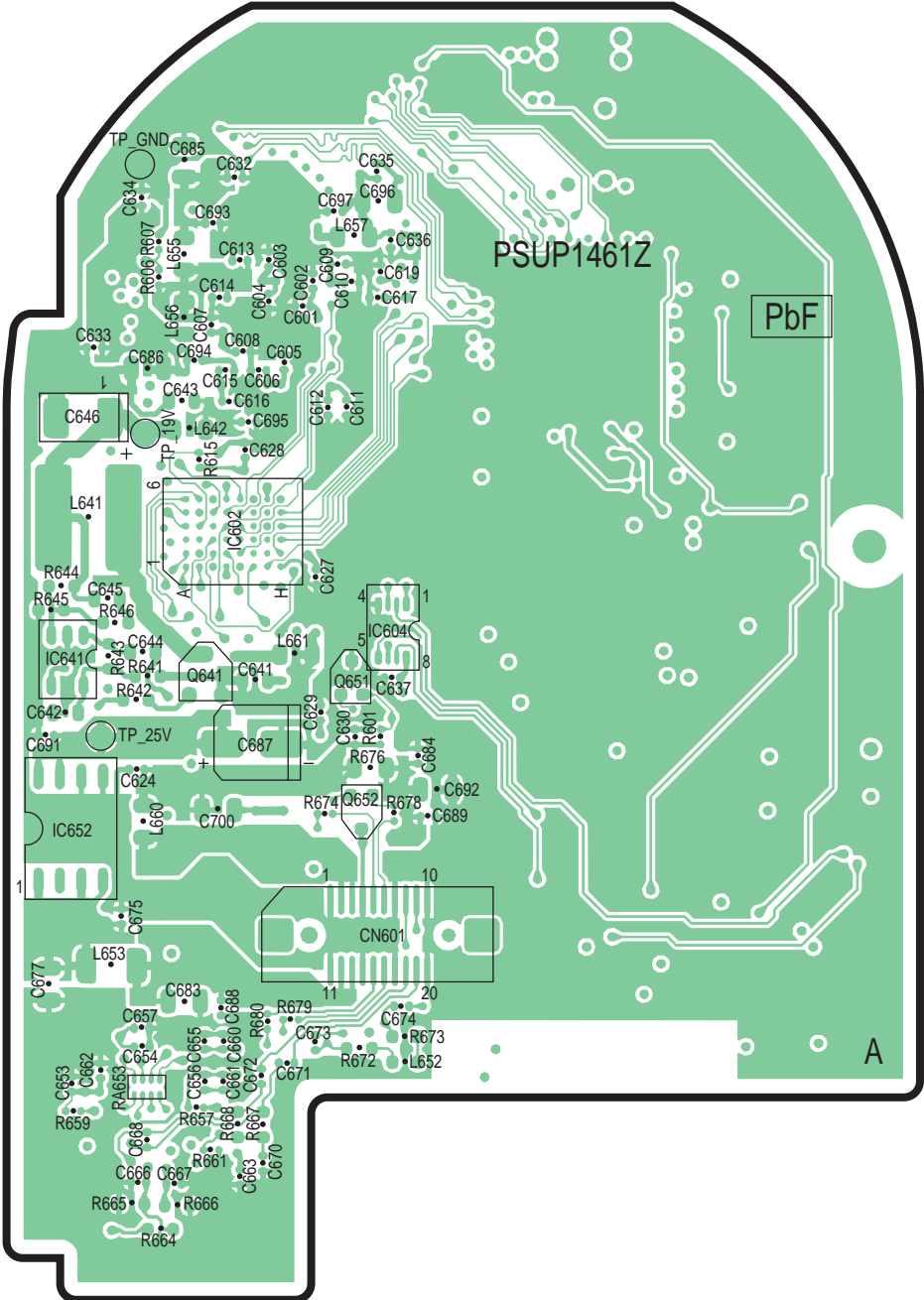
34.7. LENS BOARD (COMPONENT VIEW)

34.8. LENS BOARD (BOTTOM VIEW)

34.9. RF BOARD (COMPONENT VIEW)

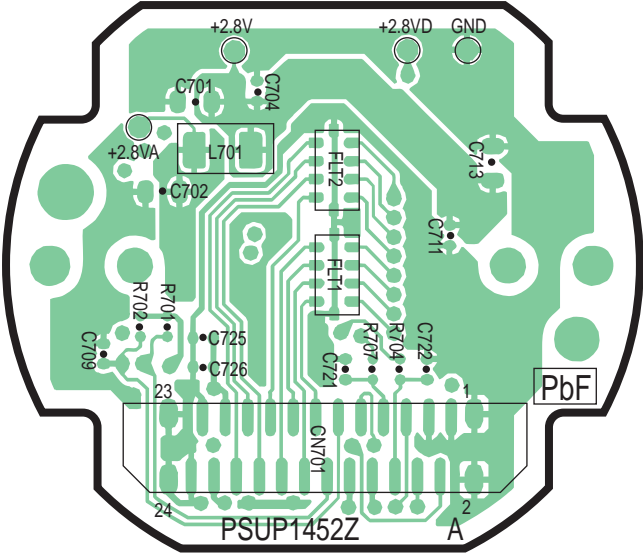
34.10. RF BOARD (BOTTOM VIEW)

A BL-MS103A

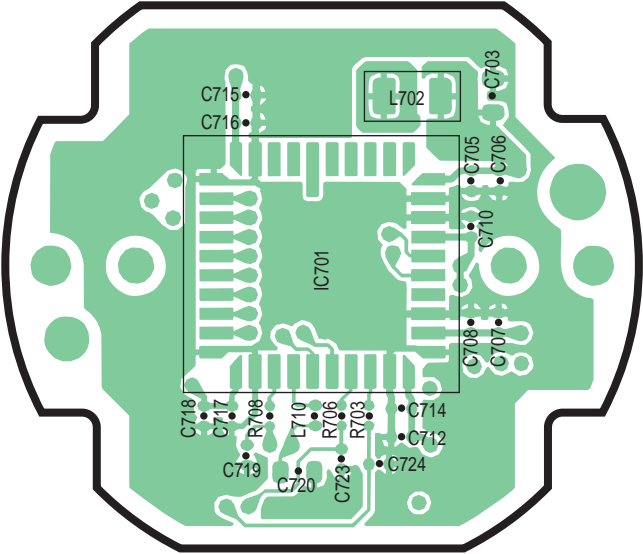


BL-C30A RF BOARD

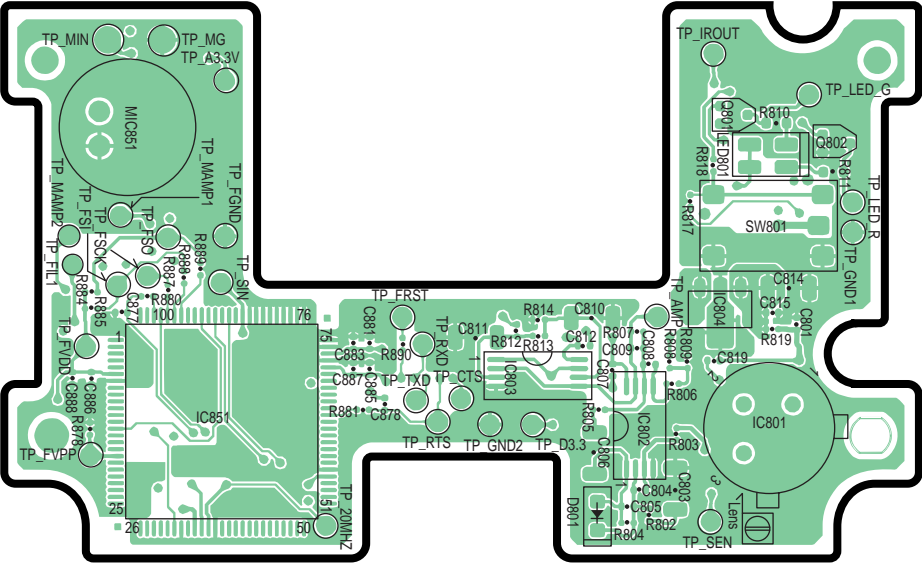




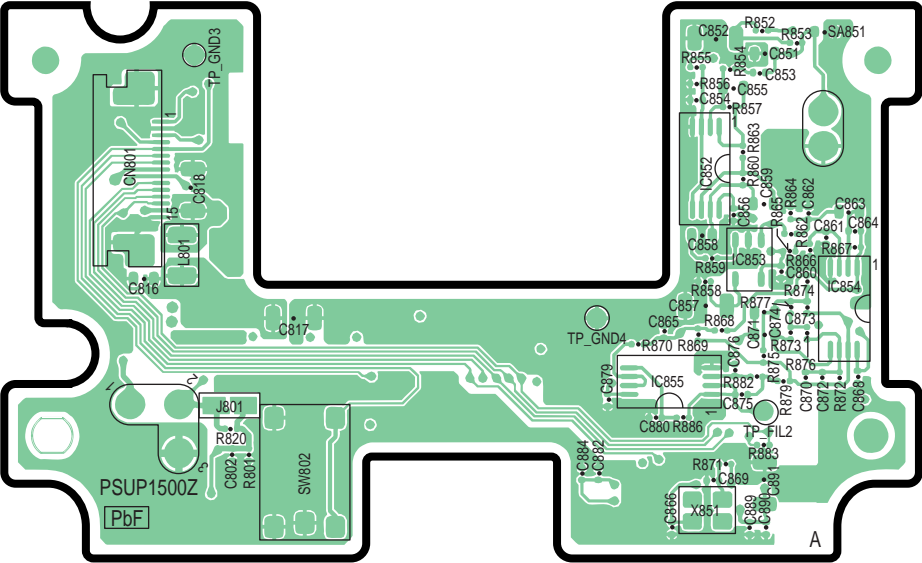
BL-C30A LENS BOARD



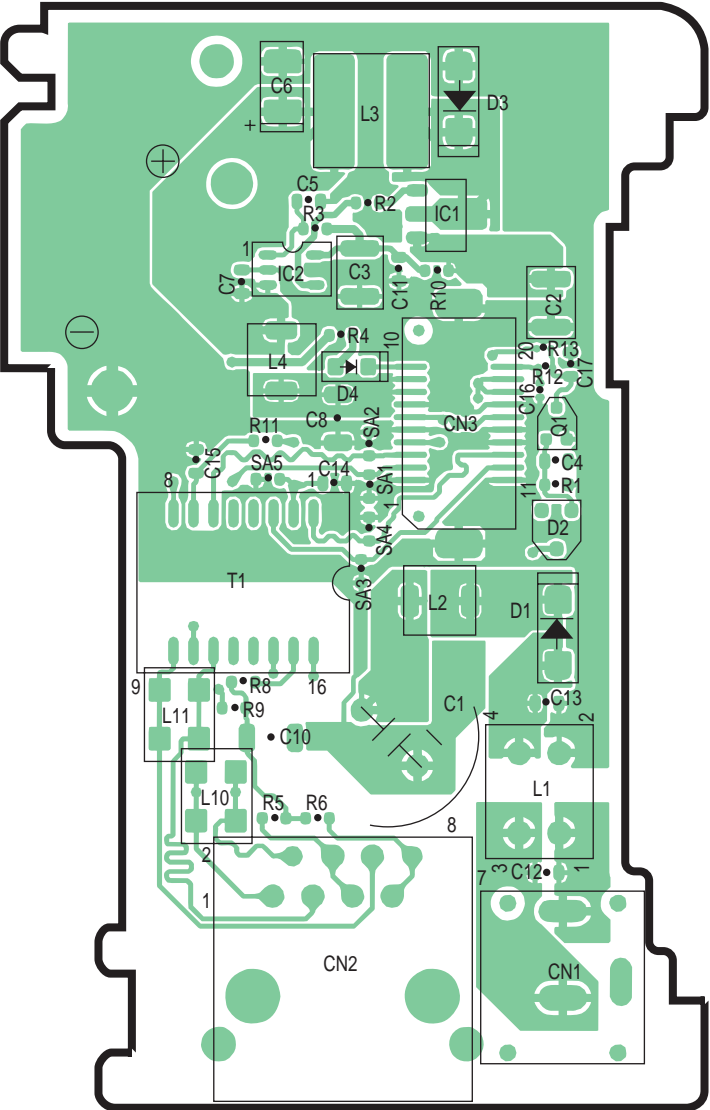
BL-C30A LENS BOARD



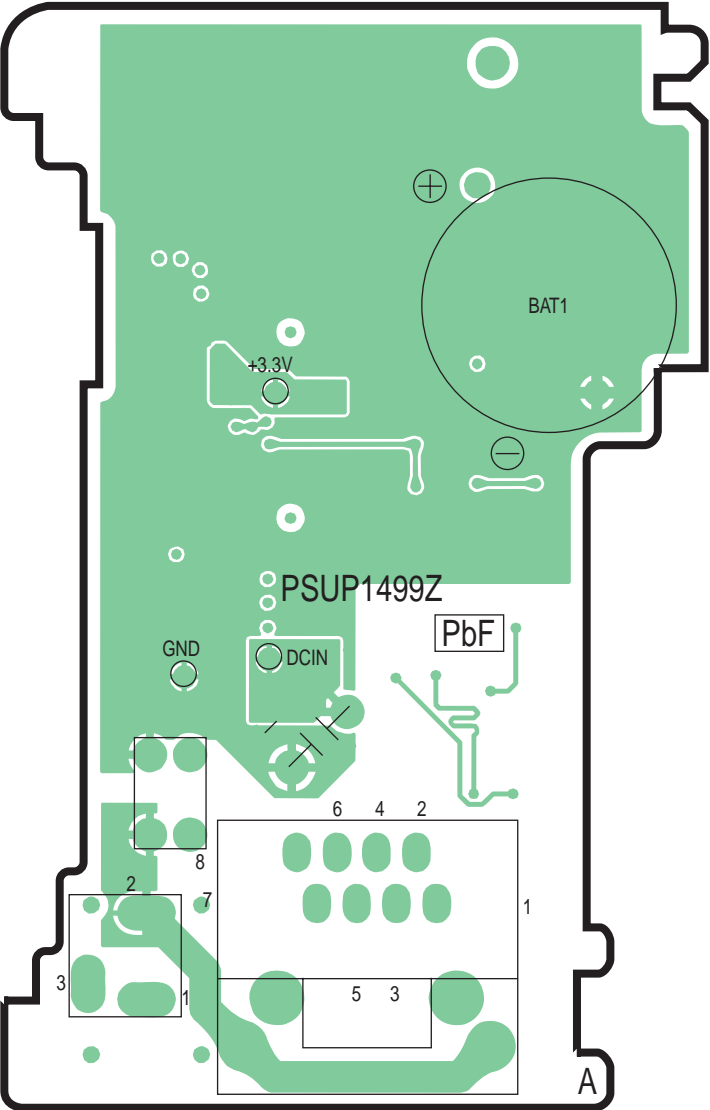
BL-C30A SUB BOARD



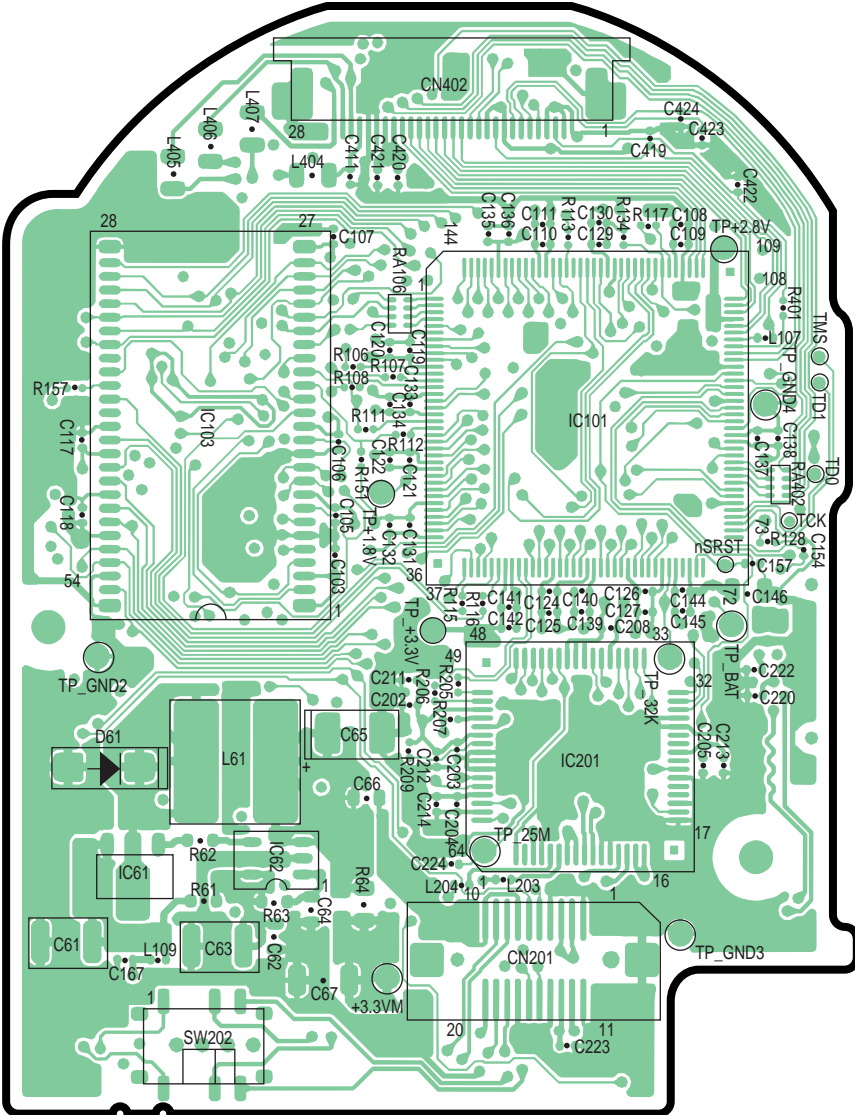
BL-C30A SUB BOARD



BL-C30A I/O BOARD



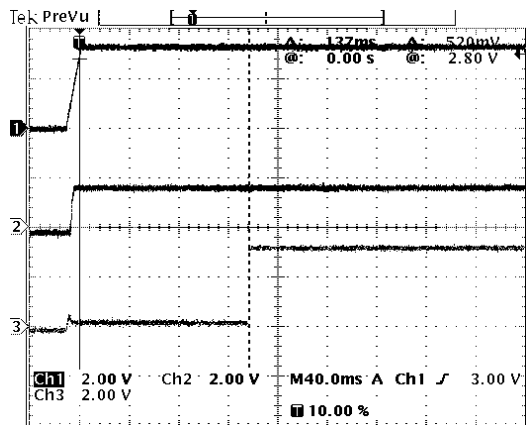
BL-C30A I/O BOARD



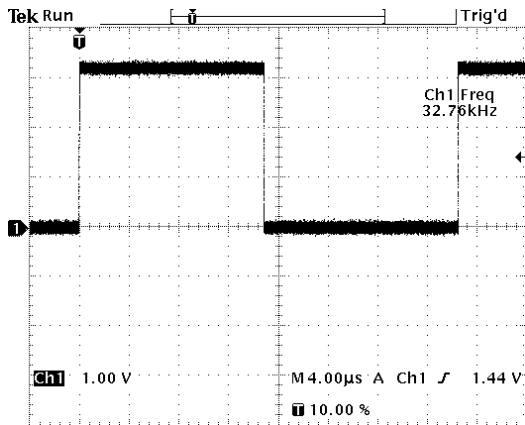
BL-C30A MAIN BOARD



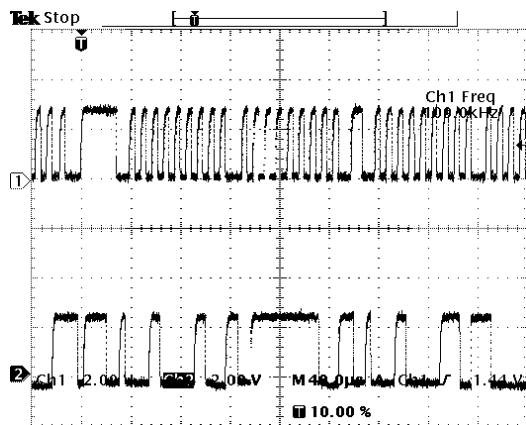




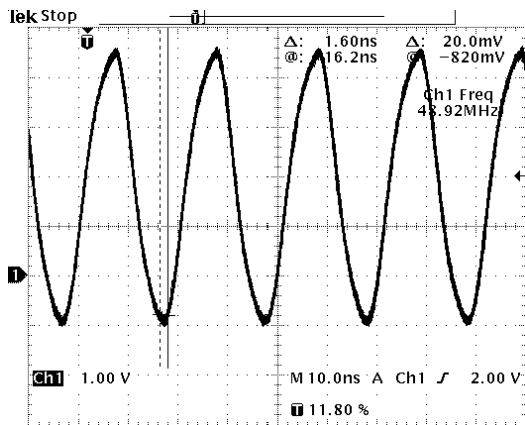
(A1)



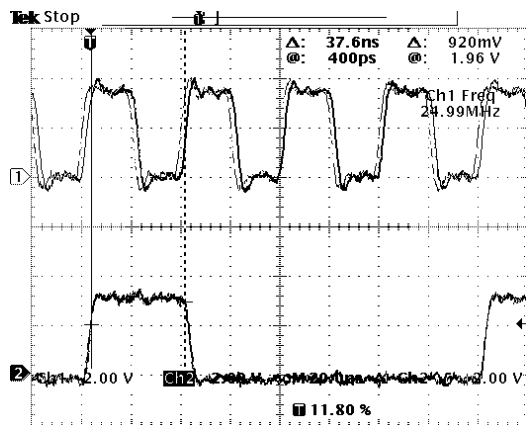
(B)



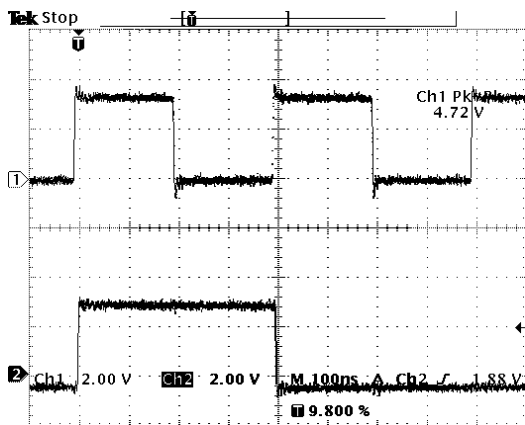
(C1)



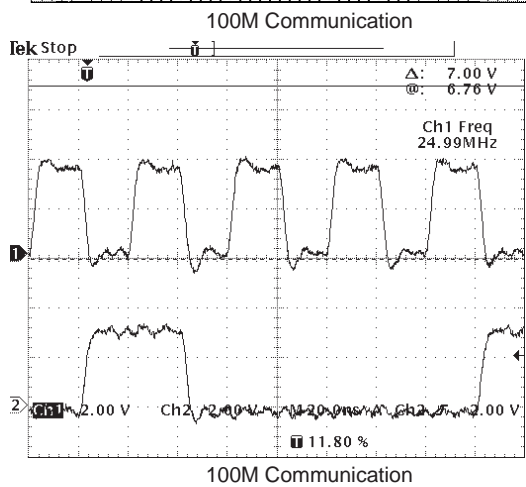
(D)



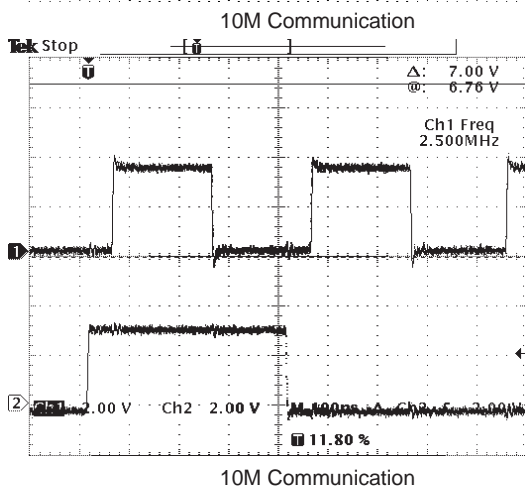
(E1)



(E1)

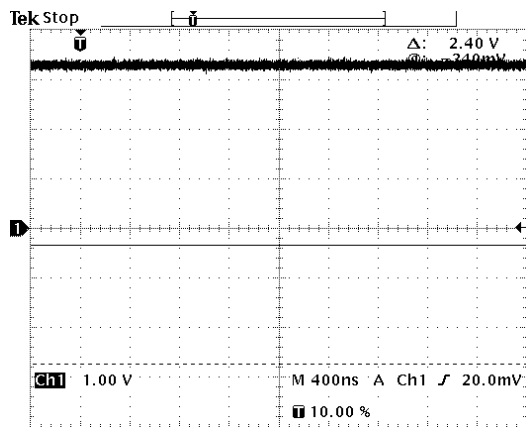


(E3)

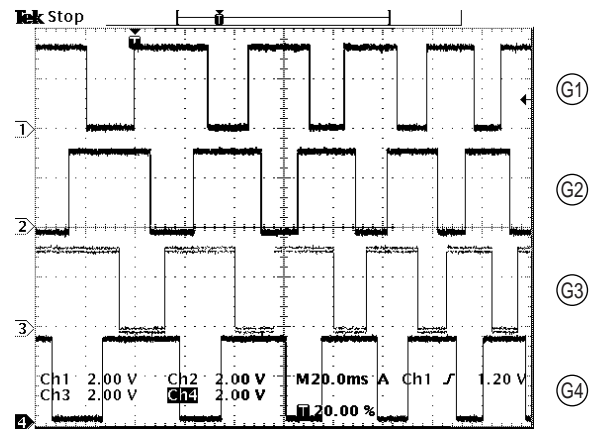


(E3)

(E4)



(F)

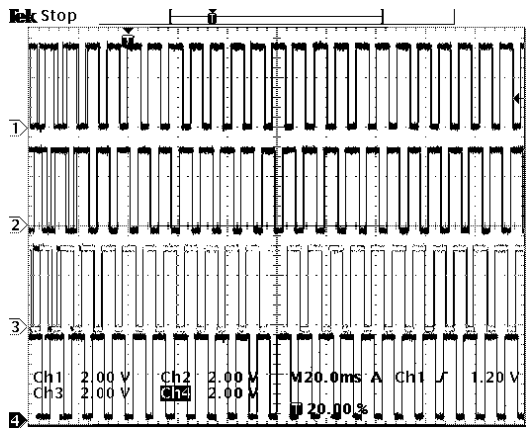


(G1)

(G2)

(G3)

(G4)

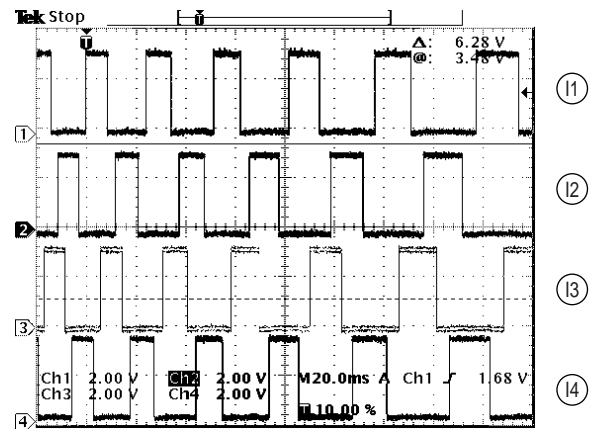


(H1)

(H2)

(H3)

(H4)

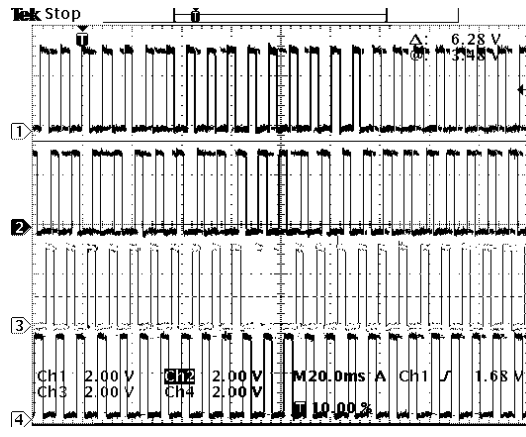


(I1)

(I2)

(I3)

(I4)

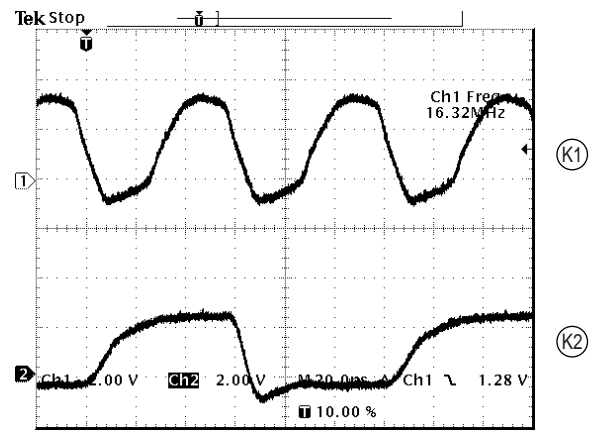


(J1)

(J2)

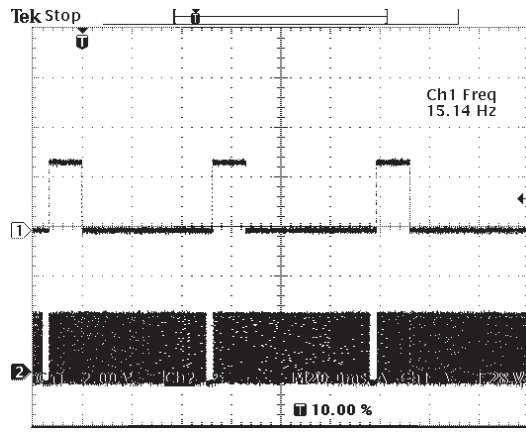
(J3)

(J4)



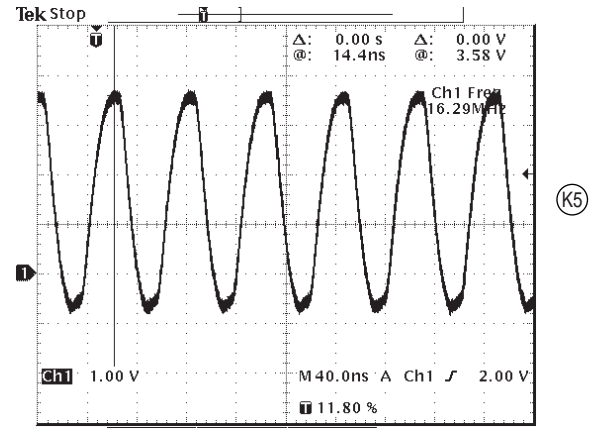
(K1)

(K2)

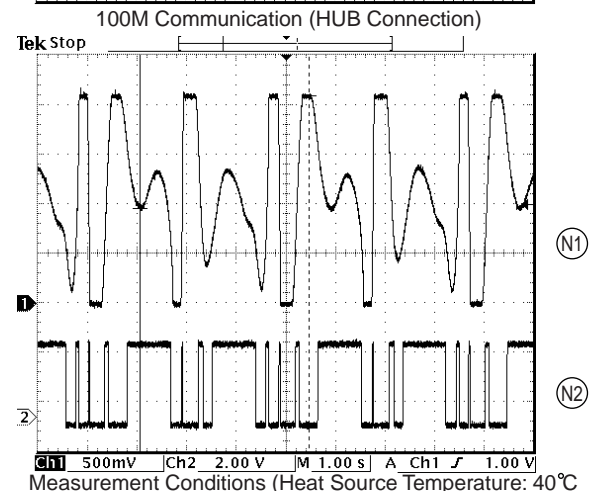
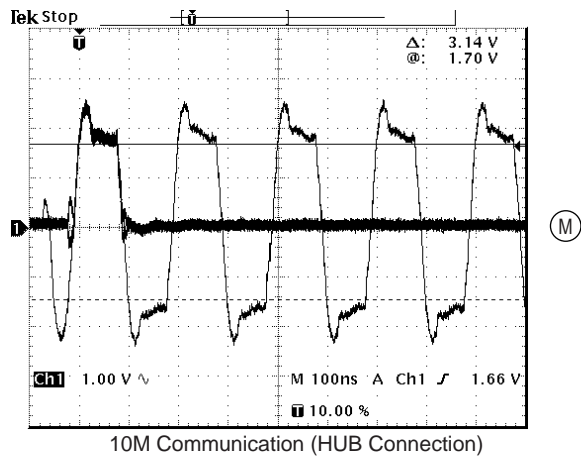
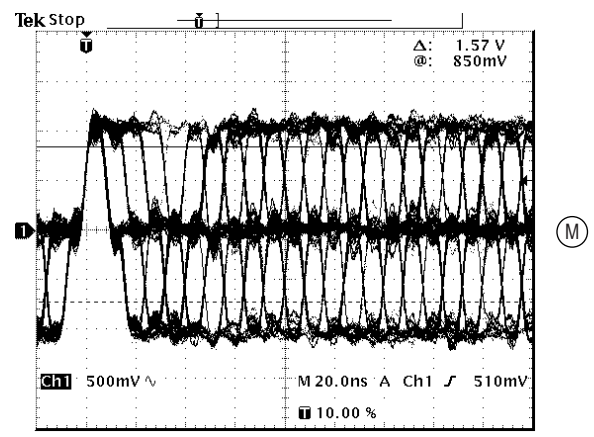
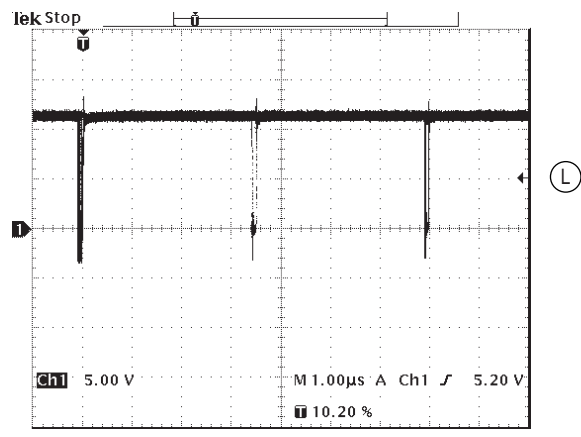


(K3)

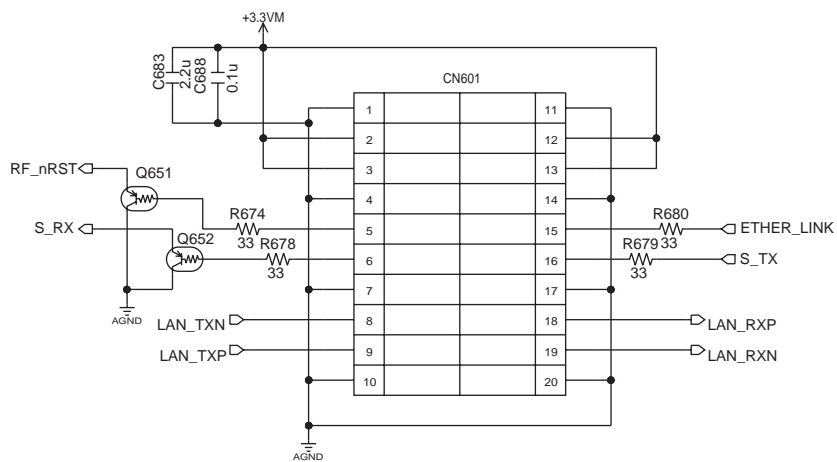
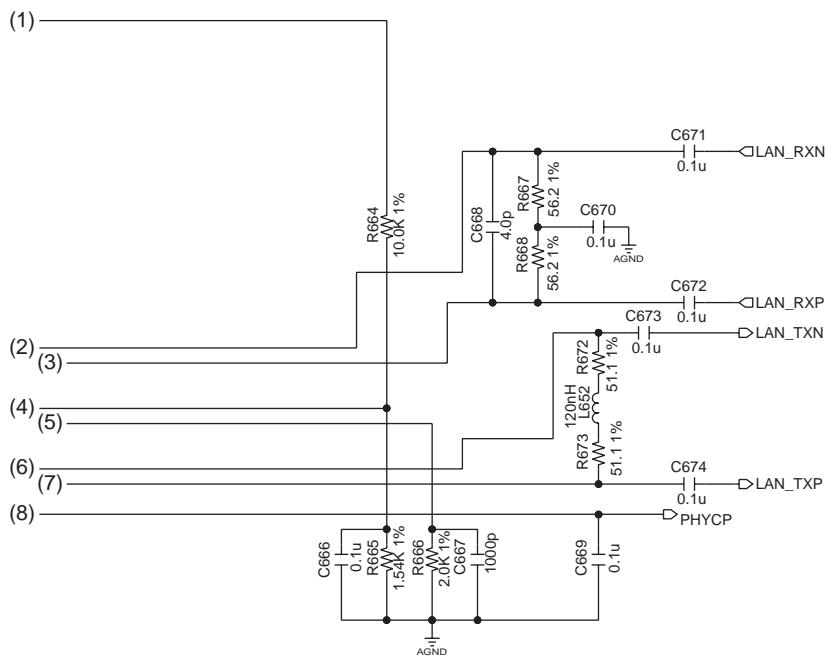
(K4)

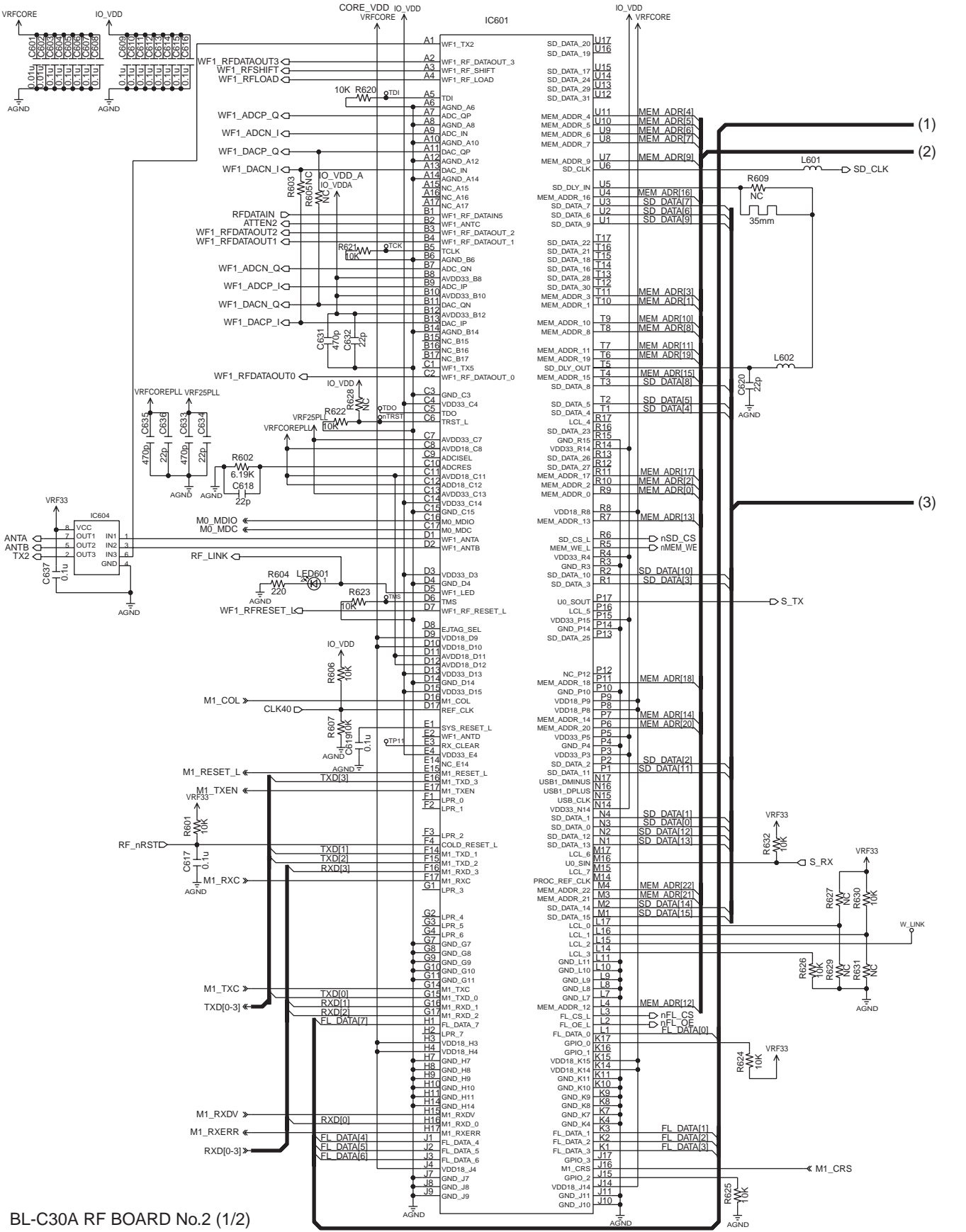


(K5)



Measurement Conditions (Heat Source Temperature: 40°C
Set Distance: 10cm
Moving Velocity: 300mm/sec)

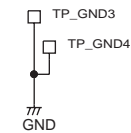
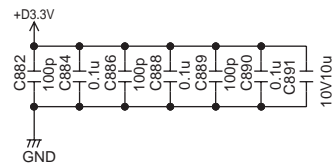
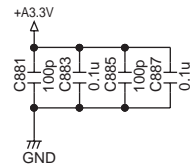
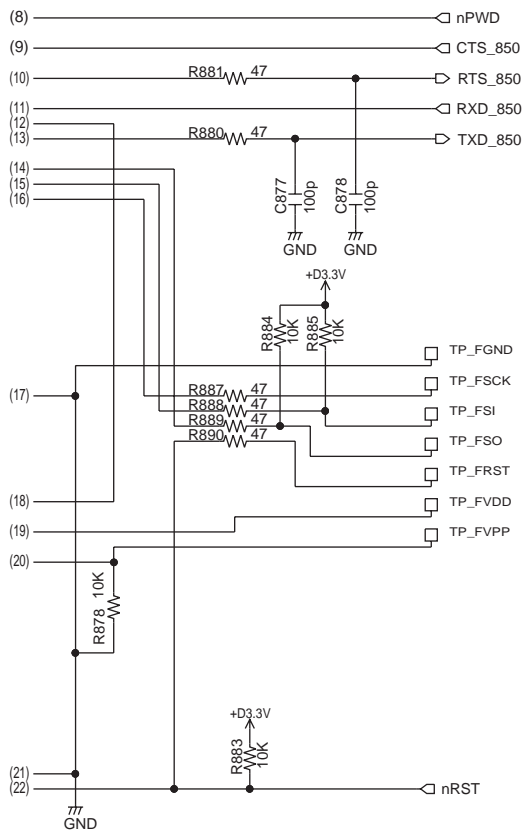
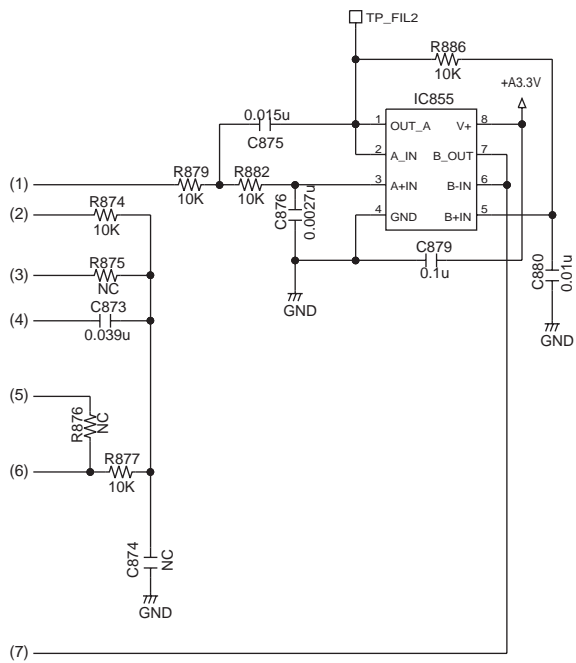




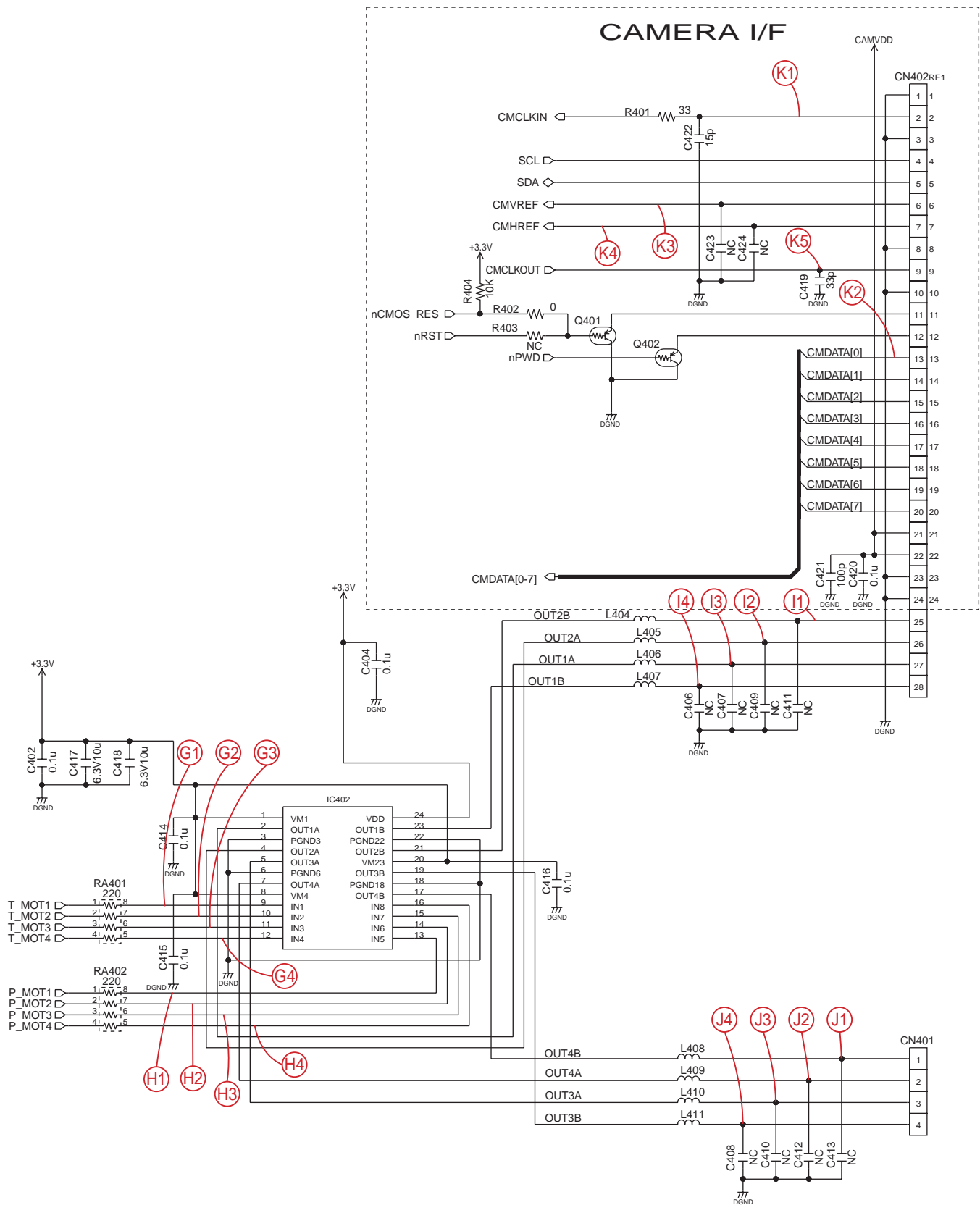


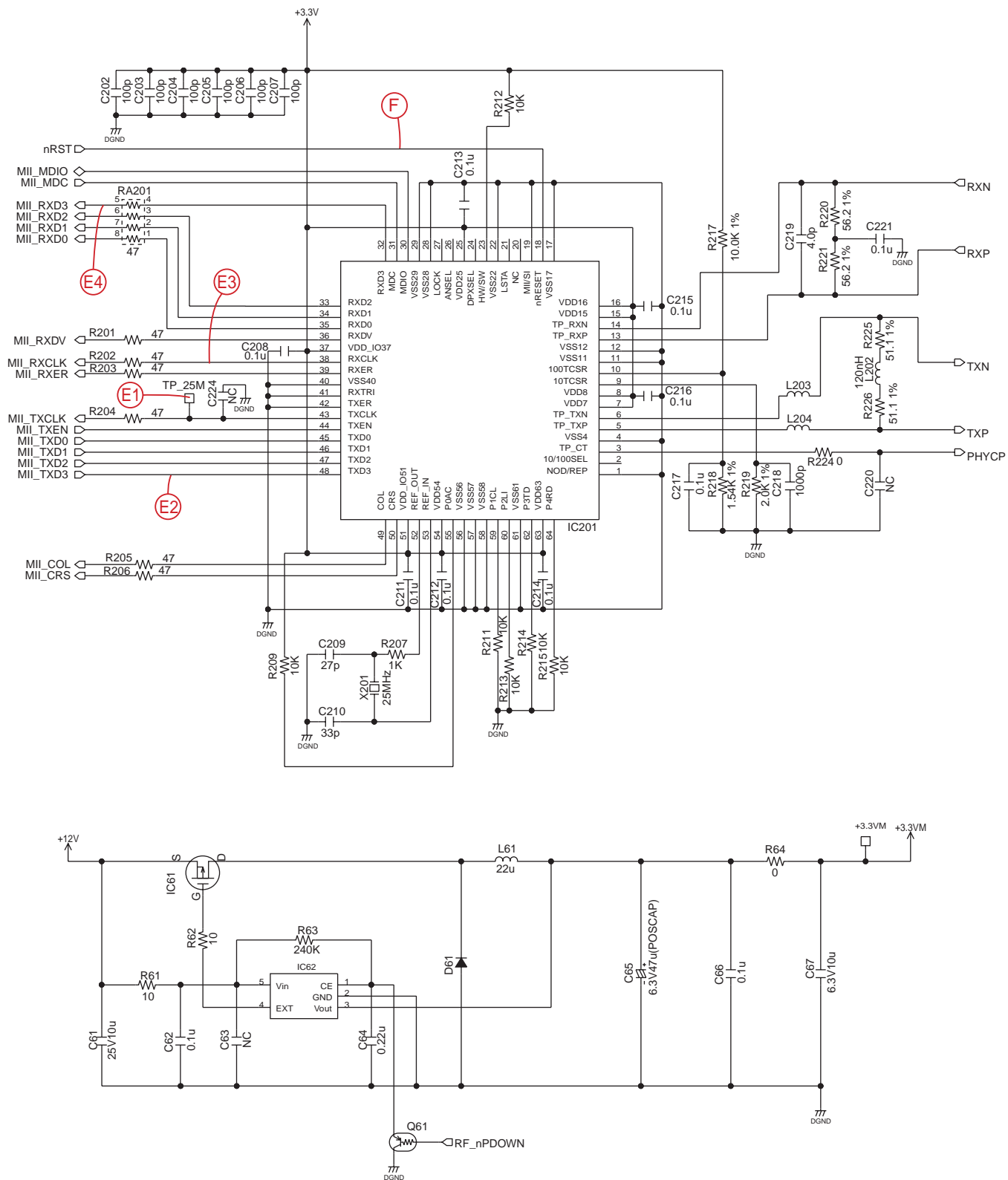


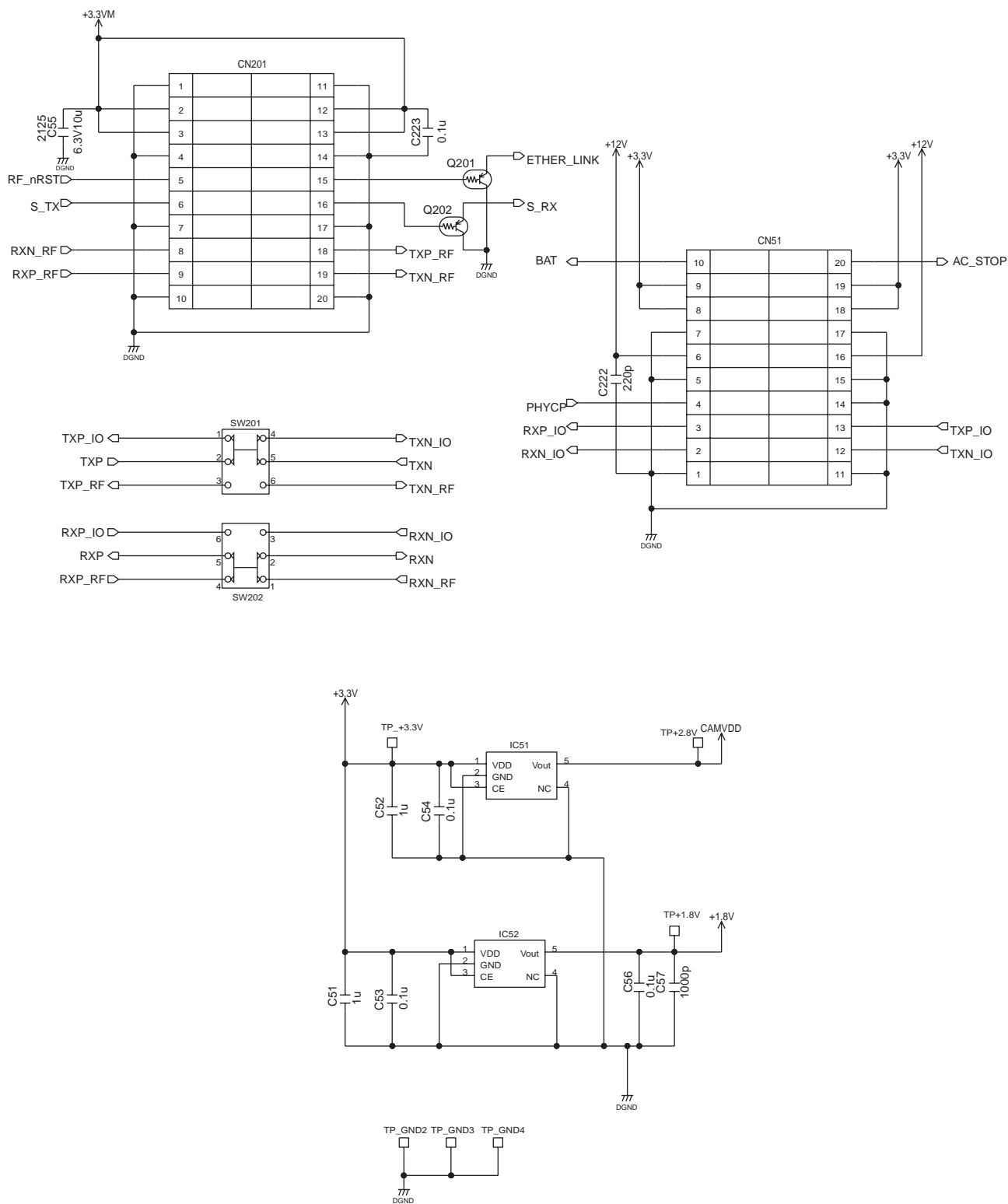




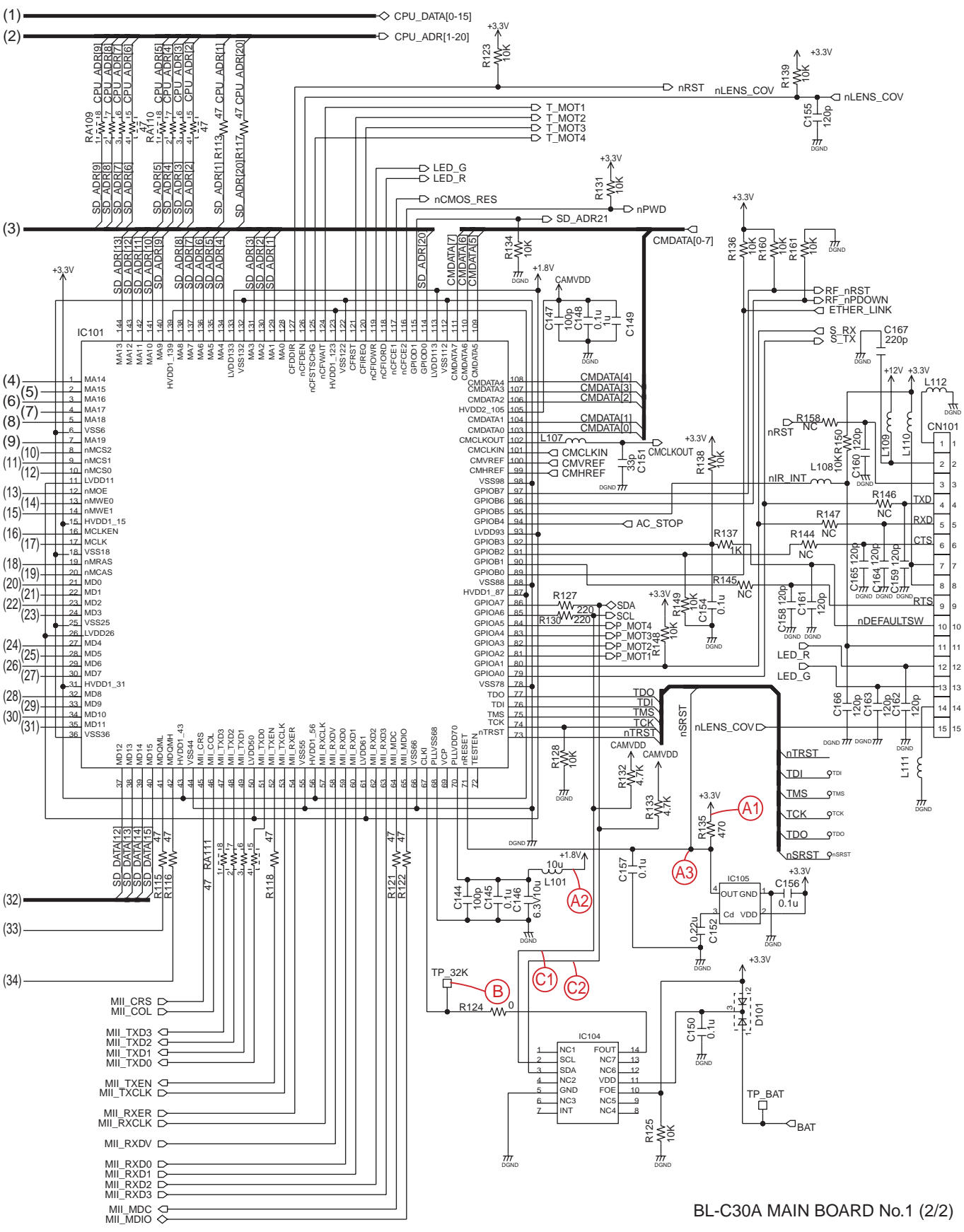
















1 2 3 4 5

A

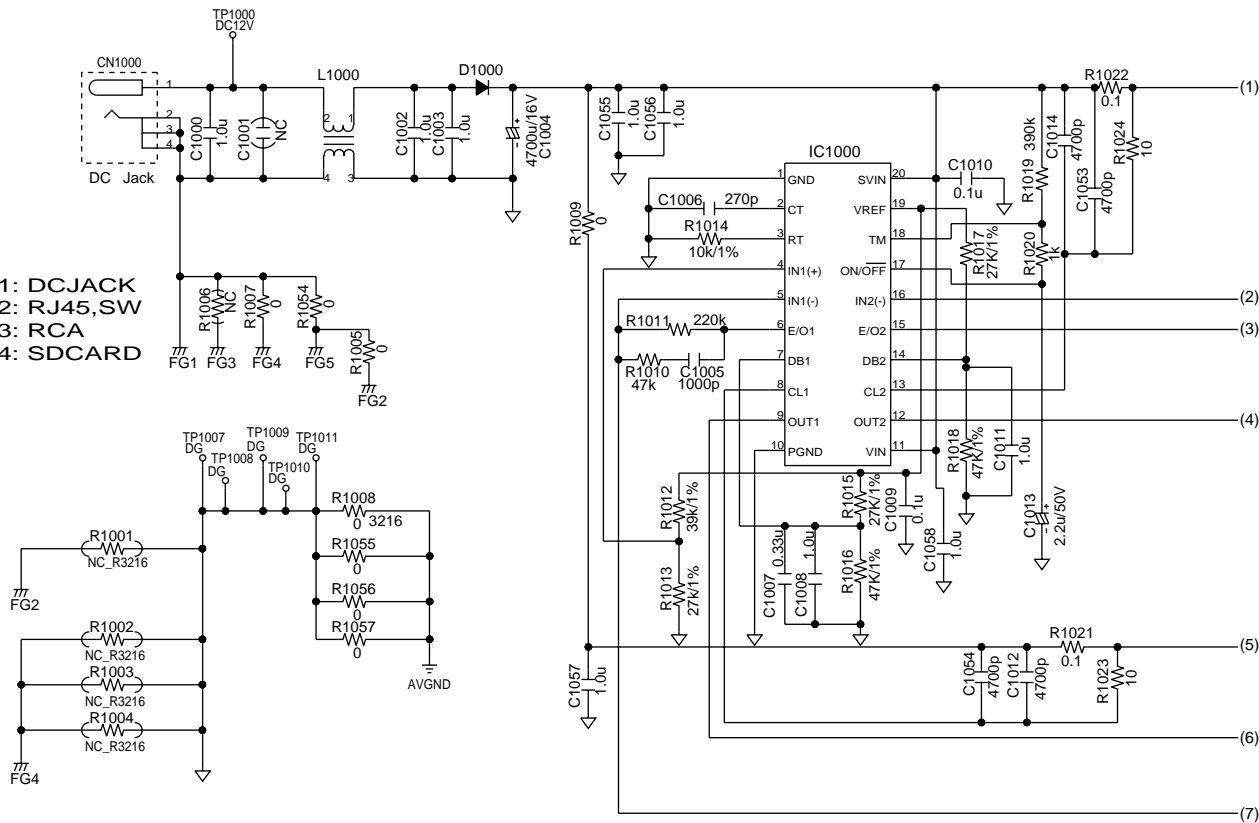
B

FG1: DCJACK
FG2: RJ45,SW
FG3: RCA
FG4: SDCARD

C

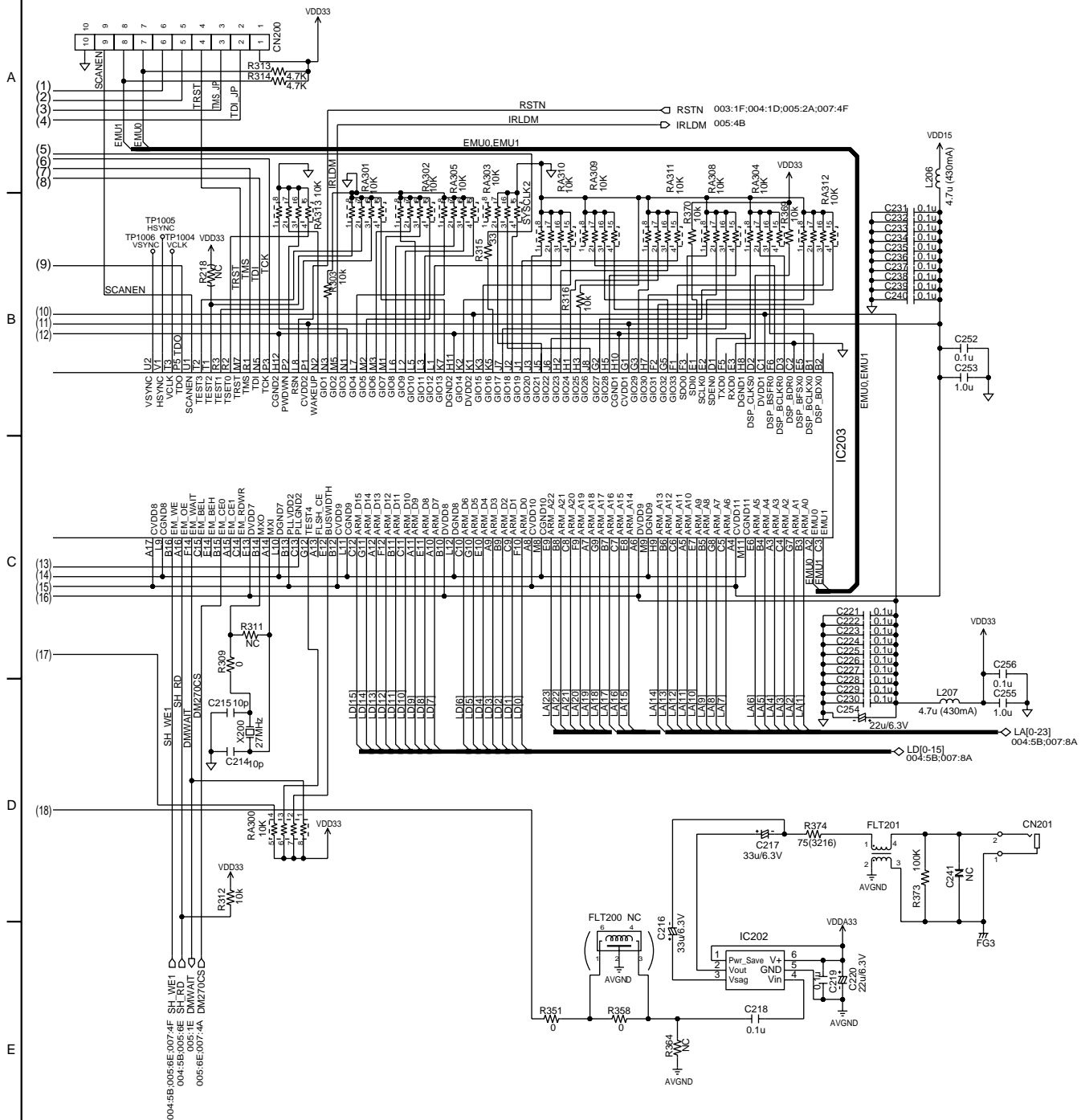
D

E















A

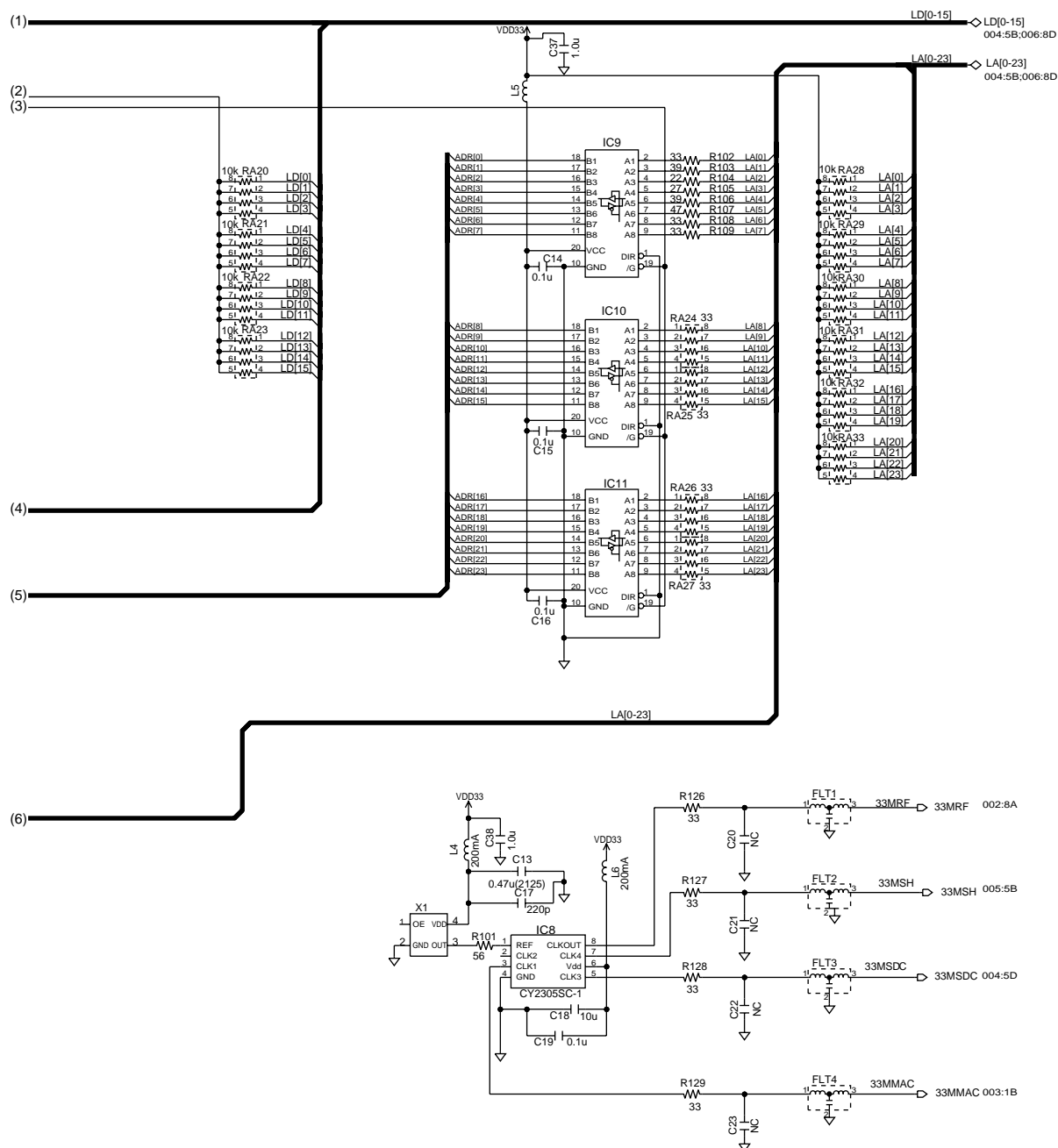
B

C

D

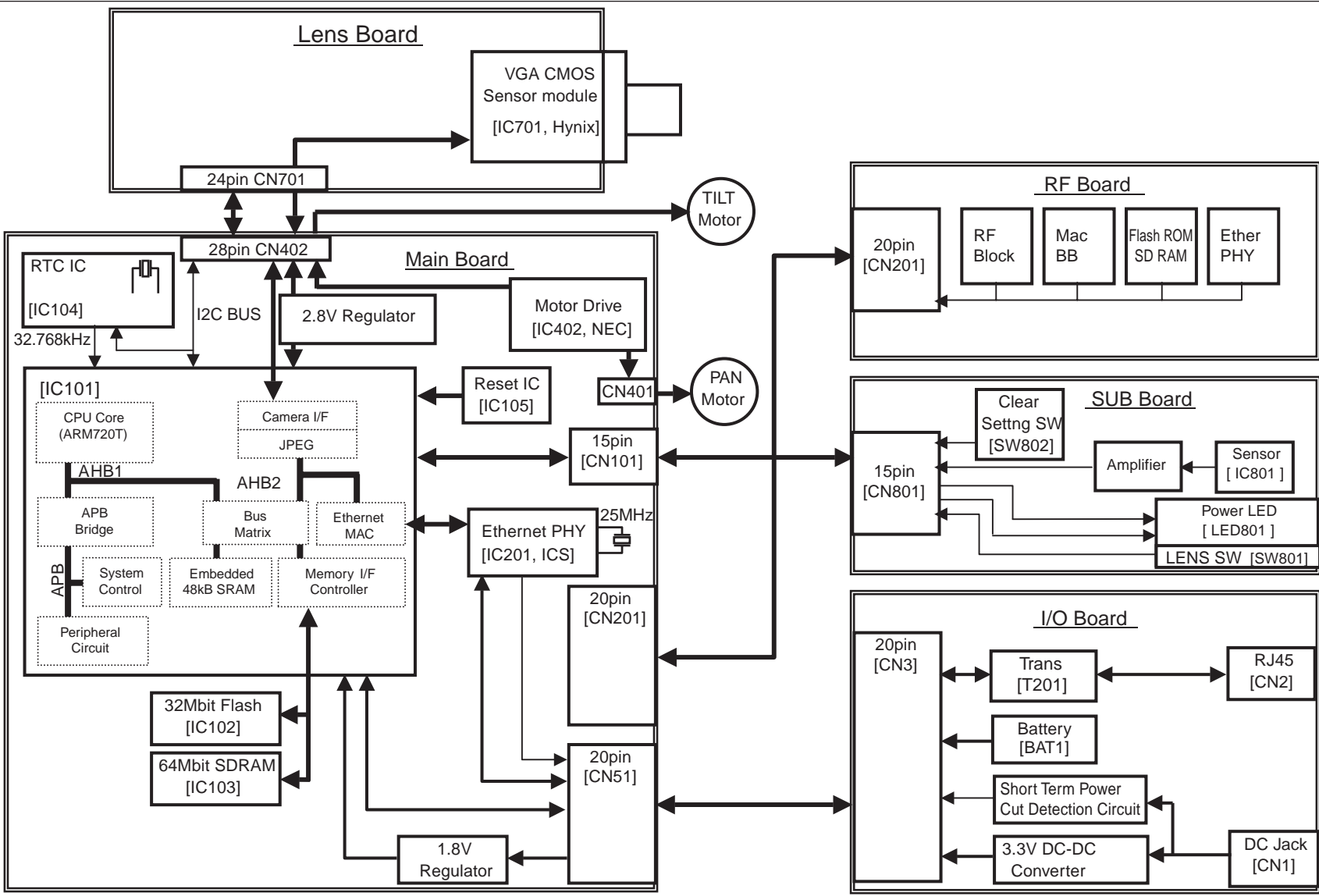
E

F

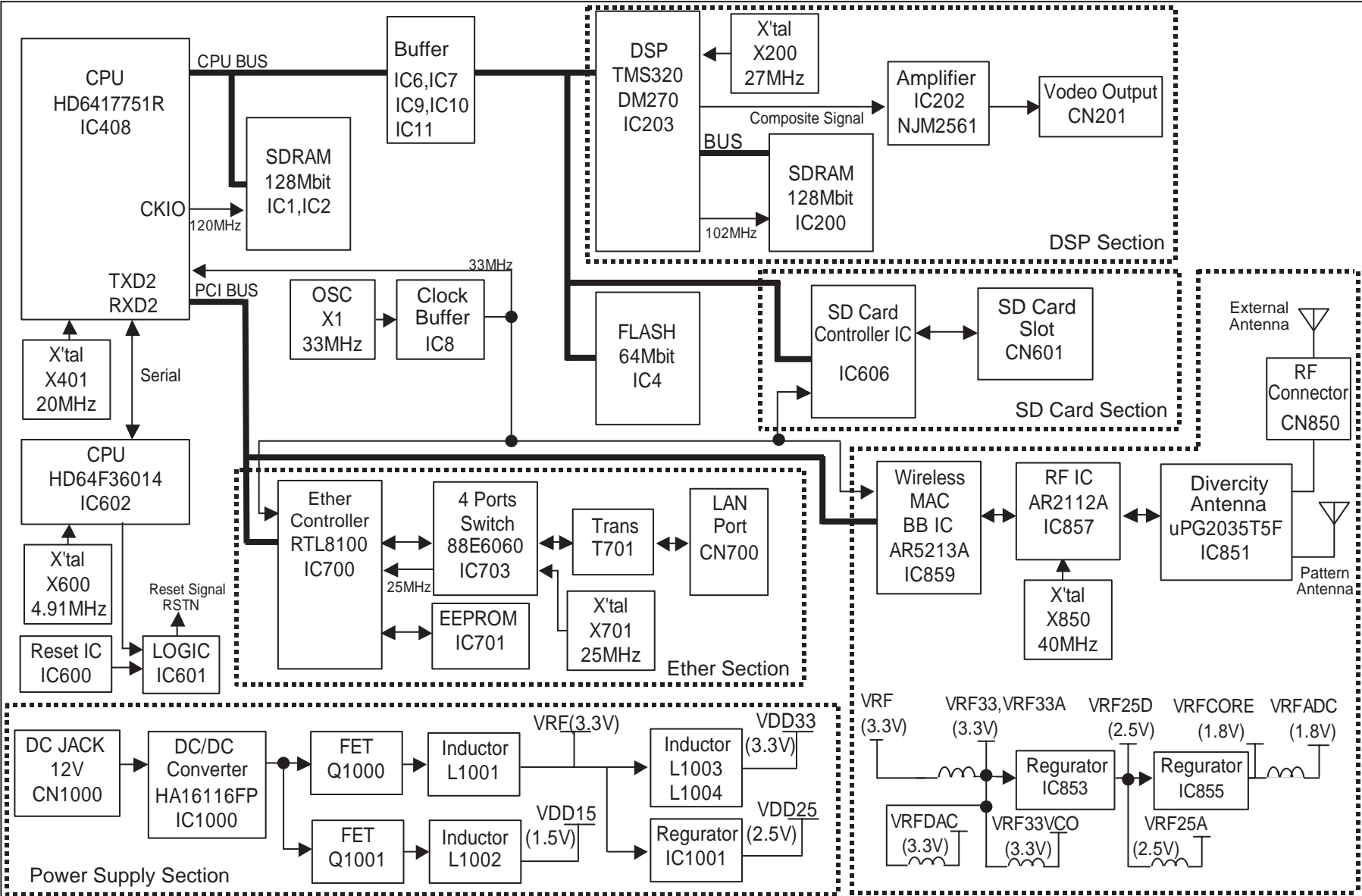






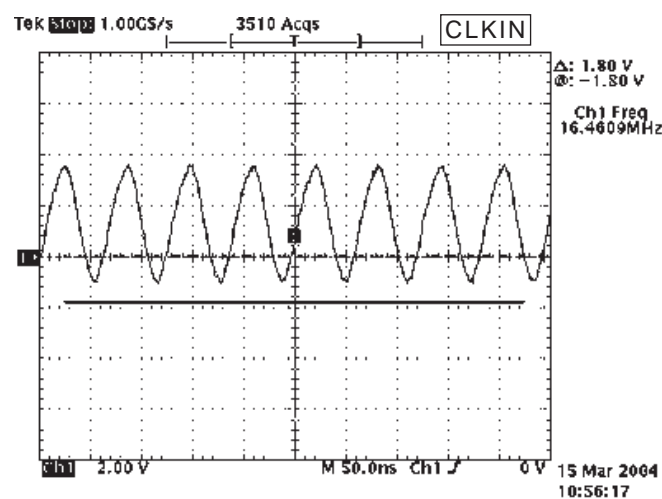


BL-C30A BLOCK DIAGRAM

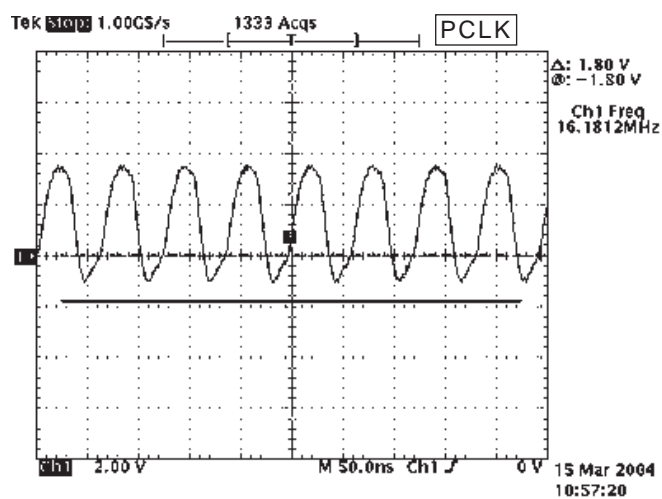


BL-WV10A BLOCK DIAGRAM

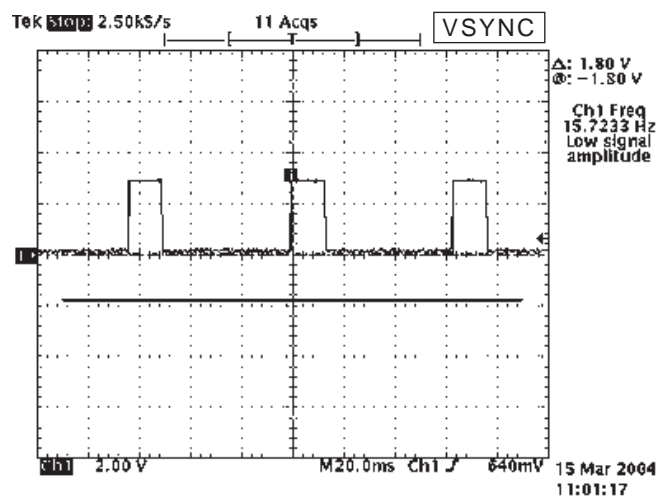
(Waveform 1)



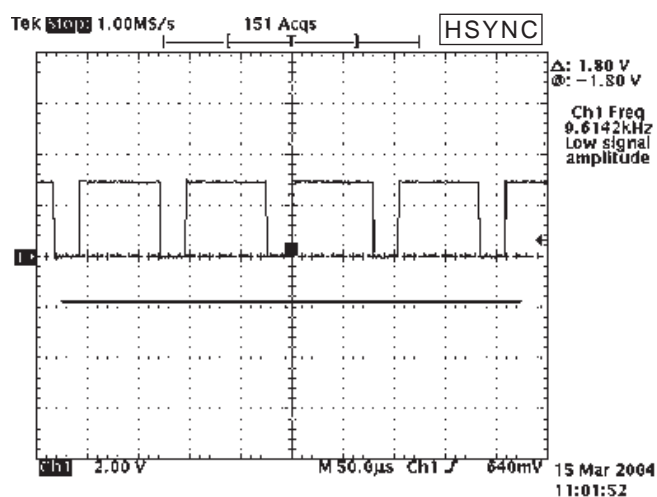
(Waveform 2)



(Waveform 3-1)



(Waveform 3-2)



(Waveform 4)

